An APPLE® Business User's Guide

Controlling Financial Performance

for Higher Profits

Dennis P. Curtin ■ Jeffrey R. Alves ■ Anne K. Briggs

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Introduction

Many of the questions you encounter as a business manager, owner, or investor can be answered with simple financial analysis techniques. For example: How much is your firm worth? Does it have sufficient funds to meet its current obligations? If not, how much money is needed from the bank, and when will it be needed? How much salary can the principals draw? Is the firm in a position to expand, or to buy another firm? Is the gross margin sufficient to cover expenses and provide profit?

Surprisingly, many owners/managers, especially in small companies, guess or rely on intuition when answering questions of this kind. Most business people are not professional financial managers and they may find analyzing basic financial statements complicated. Furthermore, analysis is time-consuming and, unfortunately, once a problem has been solved the first time, the techniques and approach used may be forgotten by the time the question arises again.

This book can help correct that situation. It's a how-to, hands-on book: how to understand and use financial statements through hands-on experience in building and exploring these statements on a personal computer. It's a practical business book that marries information from two fields, financial management and computer technology. But you don't need to know anything about either field to use this book. The information is presented in clear, easy-to-understand steps.

You'll be using some powerful tools to help you analyze and control the finances of your company. An Apple computer, such as the Apple II Plus®, IIe®, or Apple III®, used with off-the-shelf business software like the VisiCalc® or VisiCalc® Advanced Version programs, can help you save time, increase your accuracy and understanding when dealing with financial statements, and improve your financial decision making. You don't need formal financial training or extensive computer experience to be able to use this decision support system effectively.

We'll explain financial statements and how to build them on your computer. Here, we assume that you don't know much about the statements or your computer. We do assume that you've read the user's manual for the computer and VisiCalc version, but we don't expect you to know all the procedures and how to apply them. Next, we'll illustrate how you can use the computerized statements to explore possible financial changes and thereby gather information for making management decisions. Finally, we'll show you how to build detailed customized financial statements for your company.

The experience of thousands of companies has shown that numbers by themselves don't reveal the true condition of a firm; the relationships among them are needed to tell the whole story. When you go to a bank for a loan, the first thing the bank officer will do is reduce your statements to ratios to see if you can meet current obligations, if there is sufficient cash flow to meet interest payments, and if the company is financially sound.

You need to know this same information, not only to secure financing, but also to achieve the goals you have set for yourself and your firm.

Even if you have an accountant or accounting department, your understanding of financial statements is critically important for several reasons.

First, the more you understand, the more you are in control. The financial condition of your firm or department is your responsibility. Relying entirely on guidance from an accountant, whether on your staff or from outside, is an invitation to trouble. Do you really know how to use the information your accountant gives you? Do you understand his or her evaluation of your financial position? The accountant may not give you a sufficiently detailed explanation of the statements, the meaning, and their implications for your business.

Second, these statements are the basis for financial analysis. They are evaluated and used by bankers and investors before they make loan and investment decisions. If you want to enlist the support of these members of the business community, you must be able to provide these statements and explain or defend items that appear in them.

Third, you can read and interpret these statements and ratios as part of your own management program. Only through careful financial analysis can you find and remedy the weak spots in your financial policies, and plan sound and vigorous programs for the future.

Attention to financial statements is vital to controlling a company. A manager plans towards some objective or vision of the future. Results of daily operations are then compared against the goals or objectives. And for a business, all operations such as production, sales, and personnel have financial consequences. These consequences are shown in the financial statements of the firm. Control involves measuring performance, comparing the results with the plans, and taking action to improve the firm's financial state. This book, your personal computer, and VisiCalc software can help you measure performance and explore the consequences of possible changes in it. Then you can determine and take the action required to improve that performance, to control your business for higher profits.

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1 Controlling performance step by step

Introduction

Business decisions are never made in isolation. They are always based on something, from hard numbers to a gut feeling for what is best. Some decisions are well thought out and well planned. Others are quickly made and implemented based on intuition and experience. Before personal computers became affordable, and easy enough for business managers to use, more decisions had to be based on intuition. The alternative — collecting and analyzing the necessary numbers — was simply too time-consuming.

Today, computers such as the Apple can help you make those everyday business decisions more effectively. Personal computers can make it possible for even the busiest manager to get better control of his or her company or department. Here's what happened to one businessman when he put an Apple in his office:

> I think I am typical of the new personal computer user: a businessman who knows nothing about, and isn't interested in, what goes on inside my computer. But I have business problems that need to be solved faster and less expensively than traditional methods permit.
>
> Until recently, I used the same old pencil and paper (and most of all, eraser) approach to solving problems: budgeting, planning, inventory management, on and on into the night and weekends. Because of the time involved in manipulating the information, analyses went undone, estimates weren't completed in time to influence decisions, and budgets were prepared to solve problems rather than anticipate them.
>
> Driven by the strongest of human emotions — fear and frustration — I decided to buy a personal computer system. In a few days, I had mastered the basics of both the computer and the VisiCalc® program. What a joy: set up a problem, change one variable, and see the new results all recalculated instantly and automatically. Now, I could explore many approaches to one problem in the same time that just one could be explored with pencil and paper. And each time I returned to analyze similar problems, my analysis got faster and better.
>
> But, while I was congratulating myself on my new efficiency, I also realized that the power of this new tool exceeded my ability to use it. I saw that to get more out of the computer, I had to know better what information to put in and how to evaluate the answers it gave.
>
> Fortunately, the computer is also a great learning tool. Because it frees me of those tiresome calculations, I can spend more time learning the principles involved. And seeing a complicated problem reduced to simpler terms reveals more interconnections between items or decisions than I had imagined. I always knew, for example, that prices and profits were related, but couldn't tell how sensitive one would be to a change in the other. The models I built on the computer showed that instantly. My computer isn't just a solution to problems I already understand, it's become a new way of learning about my business.

People expect the computer to save them time. That's probably why they bought it in the first place. What they don't anticipate is how much more they will learn about their business by using it.

What are some of the questions in need of answers that drive more and more people to spend money on a piece of hardware that they are initially unfamiliar with? Here's a sample:

- How can I increase my own productivity?
- How can I better manage costs?
- How can I make better day-to-day financial decisions about prices, purchases, and investments?
- How can I finance the company or department, and how do I convince bankers and others to provide the support I need?
- How can profits be improved, without sacrificing future growth?
- How can I get more control over the company?

This book will help you answer those questions, and others, by using the tools of the personal computer and financial statement analysis. Financial statements, such as the balance sheet and income statement, are vital indicators of the life and health of your company. When they are laid out on paper, they may give a false sense of permanency. Poring over them, you may feel that you're doing a post-mortem. But when these same statements are on the computer, you'll see that there is life between those statement lines. With your electronic worksheet, you can explore the financial effect of decisions and of the meanings behind the changes in numbers. You'll learn how to read the statement signs that point out problems or possibilities for business growth.

Although there are countless questions that could be explored on a computer, this book covers one essential question: How's business and how could it be better? Undoubtedly, you're familiar with this question. It's one that people routinely ask you, or you ask yourself. What information do you include in your answer? How do you describe and assess your business? Your company has so many operations; how do they fit together? You could reply that sales are up or down, or that profits are up or down, but is that sufficient? No. To really respond to the question of "How's business?" you have to answer two separate but related questions: "What is the financial condition of my company?" and "How is my company performing?"

Condition and capital

Both the amount and the form of your company's capital are important aspects of its financial condition. Obviously, without capital you can't do much. But the form of the capital you have is as important as the amount. In a business, capital is invested in assets. Assets are the economic resources of a company that can be put to use. Assets are an economic plus; they are potential. Some produce more capital; others simply allow the firm to operate efficiently and be competitive in our economy.

But assets alone don't determine the financial condition of a company because they are always offset by liabilities, economic claims against a company's resources. Common liabilities are debts such as bank loans or mortgages, or accounts payable. The nature and balance of a company's assets and liabilities determine the financial condition of that company, a condition that is reflected in a company's *balance sheet.* The balance sheet presents a financial picture of a business — its assets, liabilities, and owner equity — on a given date. It is usually prepared as of the close of business on the last day of a month, and answers the question, "How did we stand financially at that time?"

It is relatively easy, then, to find out the condition — or fitness — of your company: you check the balance sheet. The challenge lies in using its information to improve the firm's condition. How you go about it depends on what you want to do. Fitness for what? For most businesses, the primary activity is making profits, having an increase in capital after expenses are paid. A company needs to achieve a certain level of condition to make profits. The balance sheet tells you the company's current financial state and its readiness to make profits, but it doesn't really tell you how the company has been doing over a period of time. For that information, you need to go beyond the balance sheet and look at your company's performance, as reflected on the income statement.

Performance and profits

Performance means action over time. Businesses perform; and a business's performance is measured in profits. Profits are the hoped-for results of what you do with your company's capital.

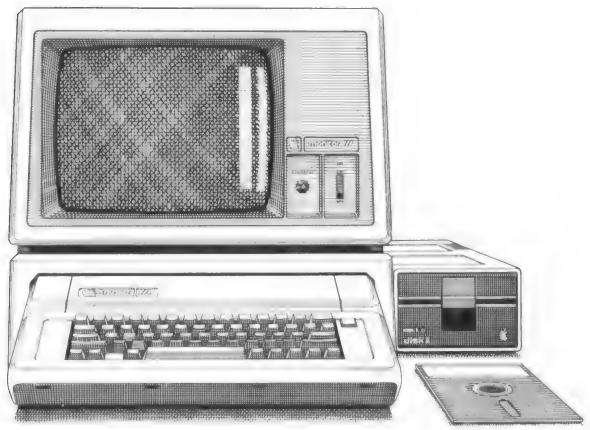
You can measure the performance of your company in different ways, but all look at profits. For example, you can determine how much profit you are generating in terms of a particular activity, such as sales, or you can look at profits in terms of how much you, as the owner, have invested in producing these profits.

Although there are different profitability indicators, they all use information from a firm's *income* (profit-and-loss) *statement* and *balance sheet.* The income statement measures costs and expenses against sales revenue over a period of time, such as a month or a year. The income statement shows the net profit or loss of the business for the entire period, and therefore it answers the question, "How has the business been performing?"

You will be entering the income statement and the balance sheet step by step on the computer. Terms are defined as you proceed. Finally, you will explore ratios, which show the relationships between various items on the income statement and the balance sheet. You will learn how to use the financial data you get from the computer to make better decisions affecting your firm's financial performance and condition.

A special Business User's Guide diskette to accompany **Controlling Financial Performance** is available from the publisher. The diskette is not essential but it will save you much time, since it contains the example income statement and example balance sheet used in this book. It also contains a detailed income statement and balance sheet you can adapt to your own business, and supplemental templates to break down key line items on the income statement and balance sheet. If you did not purchase the Disk Edition of this book, and you want to order the diskette, use the Order Form on page 170.

The approach we will use



Courtesy of Apple Computer, Inc.

***The computer system you need**, covered in Chapter 2, describes the Apple computer, VisiCalc program, and diskettes that you can use with this book and in your business.*

EXAMPLE.1
INCOME STATEMENT FOR THE PERIOD
JANUARY 1 TO DECEMBER 31, 19..

ITEM	$	%	<..ORIGINAL..> $	%
NET SALES	300000	100	300000	100
COST OF GOODS SOLD	180000	60	180000	60
GROSS PROFIT	120000	40	120000	40
GENERAL & ADMIN.	39000	13	39000	13
SELLING EXPENSE	20000	7	20000	7
DEPRECIATION	15000	5	15000	5
OPERATING INCOME	46000	15	46000	15
INTEREST	5000	2	5000	2
OTHER INCOME/EXPENSE	1000	0	1000	00
INCOME BEFORE TAXES	40000	13	40000	13
TAXES	16000	5	16000	5
NET INCOME	24000	8	24000	8

***Building an income statement.** You'll begin the business sections of the book in Chapter 3. Following step-by-step instructions, you'll get the computer ready and then enter a sample income statement. You'll also enter formulas so the example statement works automatically; changing one element changes all of the others that relate to it. After seeing how to calculate operating ratios (reducing all dollar figures to their percentage of net sales), you will begin exploring "What If" questions designed to show you the interrelation of the various line items on the statement. What if, for example, your cost of goods sold rises? How does that affect your net income? Doing these instant calculations, you'll see how the income statement can be a working tool, not just a record of past history.*

BALANCE SHEET
DECEMBER 31,19..

ASSETS:	$	%	<..ORIGINAL..> $	%
<CURRENT ASSETS>				
CASH	30000	13	30000	13
ACCOUNTS RECEIVABLE	40000	17	40000	17
INVENTORY	60000	26	60000	26
PREPAID EXPENSE	10000	4	10000	4
TOTAL CURRENT ASSETS	140000	61	140000	61
<FIXED ASSETS>				
BLDG.& EQUIPMENT	120000	52	120000	52
LESS ACCUM.DEPREC.	-70000	-30	-70000	-30
LAND	30000	13	30000	13
TOTAL FIXED ASSETS	80000	35	80000	35
OTHER ASSETS	10000	4	10000	4
TOTAL ASSETS	230000	100	230000	100
LIABILITIES:	**$**	**%**	**$**	**%**
<CURRENT LIABILITIES>				
ACCOUNTS PAYABLE	30000	13	30000	13
ACCR'D WAGES & TAXES	10000	4	10000	4
OTHER CURRENT LIAB.	20000	9	20000	9
TOT.CRN'T.LIABILITIES	60000	26	60000	26
LONG TERM DEBT	40000	17	40000	17
TOTAL LIABILITIES	100000	43	100000	43
<OWNER EQUITY>				
COMMON STOCK	60000	26	60000	26
RETAINED EARNINGS	70000	30	70000	30
TOTAL OWNER EQUITY	130000	57	130000	57

***Building a balance sheet.** In Chapter 4, the example is expanded to include the balance sheet. You'll learn what the key line items are and how they relate to each other. This part of the example, like the income statement, will be fully automatic. When it's finished, you'll explore a sample "What If," to see how the decisions you make affect your balance sheet.*

RATIOS:		<..ORIGINAL..>
<LIQUIDITY>		
CURRENT RATIO	2.33 TO 1	2.33 TO 1
QUICK RATIO	1.17 TO 1	1.17 TO 1
<ASSET MANAGEMENT>		
AVG. COLLECT.PERIOD	49 DAYS	49 DAYS
INVENTORY TURNOVER	3.00 TIMES	3.00 TIMES
<SAFETY/LEVERAGE>		
DEBT TO WORTH	0.77 TO 1	0.77 TO 1
TIMES INTEREST EARNED	9.20 TIMES	9.20 TIMES
CF TO CRN'T POR. LTD.	3.90 TIMES	3.90 TIMES
<PROFITABILITY>		
PRF'T MARGIN ON SALES	13.33 %	13.33 %
RETRN.ON TOTAL ASSETS	17.39 %	17.39 %
RETURN ON EQUITY	30.77 %	30.77 %

◀***Understanding financial ratios.*** *In Chapter 5 financial ratios are defined and explored. Ratios tell you more about your company's condition or performance, because they can answer specific business questions. For example, if you want to know whether your company can meet the requirements of a loan agreement, you could use the current ratio or cash flow to current portion of long term debt ratio to find out.*

You'll enter ten ratios on the computer. Each ratio is explained in detail, including how and when to calculate the ratio, common adjustments made to the ratio, and how owner/stockholders, bankers, and managers view and use the ratio.

▼***Customizing statements to your own business.*** *In Chapter 6, you'll learn how to build more complex statements customized to your own business. You'll see how to set up financial statements that automatically give you year-to-year comparisons and do all of the calculations, including operating and financial ratios, which reveal the true condition of your firm.*

PAGE 1 TEMPLATE.1 FINANCIAL STATEMENTS FOR: (NAME OF YOUR COMPANY)

INCOME STATEMENT:	(---------- THIS YEAR ----------)			(---------- LAST YEAR ----------)			
++++++++++++++++++++++++++ SAVE #1 ++++++++++++++++++++++++++				LOAD #1 ++++++++++++++++++++++++++			
	$ THIS MONTH	% OF NET SALES	$ YTD THRU NA	% OF NET SALES	$ THIS MONTH	% OF NET SALES	$ YTD THRU NA	% OF NET SALES
ENTER MONTH.....>	(#)		NA		NA		NA	
ENTER YEAR.....>	(#)							
<SALES>								
GROSS SALES	($)	0	($)	0	($)	0	($)	0
DISCOUNTS,RETURNS & ALLOW.	($)	0	($)	0	($)	0	($)	0
NET SALES REVENUE	0	0	0	0	0	0	0	0
<COST OF GOODS SOLD>								
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
TOTAL COST OF GOODS SOLD	0	0	0	0	0	0	0	0
GROSS PROFIT	0	0	0	0	0	0	0	0
<OPERATING EXPENSES>								
GENERAL,ADMIN. & SELLING	($)	0	($)	0	($)	0	($)	0
INTEREST EXPENSE	($)	0	($)	0	($)	0	($)	0
DEPRECIATION	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
TOTAL OPERATING EXPENSES	0	0	0	0	0	0	0	0
OPERATING INCOME/LOSS	0	0	0	0	0	0	0	0
OTHER INCOME	($)	0	($)	0	($)	0	($)	0
OTHER EXPENSE	($)	0	($)	0	($)	0	($)	0
PROFIT BEFORE TAXES	0	0	0	0	0	0	0	0
TAXES	($)	0	($)	0	($)	0	($)	0
NET INCOME/LOSS (AFT.TAXES)	0	0	0	0	0	0	0	0

RETAILERS - BOOKS & STATIONERY
SIC # 5942 (43)

Current Data							Comparative Historical Data									
47(6/30-9/30/80)		48(10/1/80-3/31/81)					6/30/76-3/31/77		6/30/77-3/31/78		6/30/78-3/31/79		6/30/79-3/31/80		6/30/80-3/31/81	
0-1MM	1-10MM	10-50MM	50-100MM	ALL	ASSET SIZE		ALL		ALL		ALL		ALL		ALL	
69	25	1		95	NUMBER OF STATEMENTS		67		77		100		102		95	
%	%	%	%	%	ASSETS		%		%		%		%		%	
9.6	6.6			8.9	Cash & Equivalents		9.9		7.9		7.5		6.1		8.9	
17.6	19.4			18.1	Accts. & Notes Rec. - Trade(net)		18.5		19.0		17.3		18.8		18.1	
48.6	47.9			48.0	Inventory		45.8		43.8		46.7		45.6		48.0	
1.6	.8			1.5	All Other Current		1.4		1.7		1.0		1.3		1.5	
77.3	74.6			76.5	Total Current		75.5		72.3		72.4		73.9		76.5	
14.7	20.2			16.1	Fixed Assets (net)		18.3		21.2		19.8		18.5		16.1	
1.6	.5			1.2	Intangibles (net)		.9		.8		1.3		1.7		1.2	
6.5	4.6			6.2	All Other Non-Current		5.3		5.7		6.7		5.9		6.2	
100.0	100.0			100.0	Total		100.0		100.0		100.0		100.0		100.0	
					LIABILITIES											
10.7	11.9			10.9	Notes Payable-Short Term		9.9		7.9		10.5		9.9		10.9	
2.5	3.7			2.8	Cur. Mat.-L/T/D		4.0		4.0		3.7		4.4		2.8	
21.3	24.2			22.0	Accts. & Notes Payable - Trade		22.3		23.2		20.7		22.2		22.0	
6.7	8.9			6.5	Accrued Expenses		4.1		5.7		5.7		5.9		6.5	
3.5	2.9			3.3	All Other Current		3.1		5.6		3.6		3.1		3.3	
44.7	49.6			45.5	Total Current		43.5		46.4		44.2		45.6		45.5	
14.6	13.5			14.2	Long Term Debt		14.4		18.0		14.8		15.1		14.2	
1.0	3.1			1.5	All Other Non-Current		2.1		3.0		4.3		2.5		1.5	
39.8	34.8			38.8	Net Worth		40.0		32.5		36.7		36.8		38.8	
100.0	100.0			100.0	Total Liabilities & Net Worth		100.0		100.0		100.0		100.0		100.0	
					INCOME DATA											
100.0	100.0			100.0	Net Sales		100.0		100.0		100.0		100.0		100.0	
61.4	62.6			61.8	Cost Of Sales		62.0		61.5		60.4		61.7		61.8	
38.6	37.2			38.2	Gross Profit		38.0		38.5		39.6		38.3		38.2	
34.2	34.5			34.2	Operating Expenses		34.0		32.6		34.0		33.5		34.2	
4.4	2.7			4.1	Operating Profit		4.0		5.9		5.5		4.7		4.1	
1.3	.9			1.1	All Other Expenses (net)		.6		1.9		.8		.1		1.1	
3.1	1.8			2.9	Profit Before Taxes		3.4		4.0		4.8		4.6		2.9	
					RATIOS											
2.7	2.1			2.5			2.5		2.4		2.2		2.2		2.5	
1.9	1.5			1.8	Current		1.9		1.7		1.6		1.7		1.8	
1.3	1.2			1.3			1.4		1.1		1.2		1.3		1.3	
1.2	.9			1.1			1.1		1.0		.9		.9		1.1	
(68) .6	.5		(94)	.6	Quick		7		.5	(99)	.6	(101)	.7	(94)	.6	
.3	.2			.3			.4		.2		.2		.3		.3	
3 118.3	1 384.1		3	128.3			3 108.4		2 188.8		2 188.3		2 177.9		3 128.3	
19 19.2	30 12.0		21	17.4	Sales/Receivables		22 16.5		30 18.5		14 25.3		26 14.2		21 17.4	
39 9.4	43 8.5		40	9.1			46 8.0		43 8.4		42 8.7		46 7.9		40 9.1	
73 5.0	76 4.8		72	5.1			76 4.7		84 5.7		68 5.4		76 4.8		72 5.1	
104 3.5	118 3.1		111	3.3	Cost of Sales/Inventory		107 3.4		101 3.6		107 3.4		111 3.3		111 3.3	
174 2.1	166 2.2		174	2.1			166 2.2		146 2.5		169 2.3		169 2.3		174 2.1	
4.8	6.5			5.1			4.2		5.5		6.0		6.0		5.1	
7.1	10.1			7.7	Sales/Working Capital		7.3		9.6		9.7		8.0		7.7	
17.7	19.4			16.0			16.3		26.2		21.8		14.4		18.0	
7.4	5.6			6.2			11.3		13.3		9.3		8.6		6.2	
(58) 3.3 (20)	2.1		(76)	2.9	EBIT/Interest		(51) 5.7	(66)	5.9	(61)	4.3	(82)	4.2	(78)	2.9	
1.6	.8			1.6			1.8		2.5		2.3		2.2		1.8	
8.8	1.7			5.5			6.4		6.6		5.3		5.4		5.5	
(27) 3.1 (15)	1.2		(42)	2.0	Cash Flow/Cur. Mat. L/T/D		(25) 1.6	(29)	1.7	(38)	1.9	(44)	2.4	(42)	2.0	
1.3	.9			1.0			.6		.9		1.0		1.1		1.0	
.1	.3			.2			.1		.2		.2		.2		.2	
.3	.5			.3	Fixed/Worth		.4		.5		.4		.4		.3	
.7	1.0			.7			.6		1.2		1.3		1.0		.7	
.7	1.3			.8			.7		.9		.9		.9		.8	
1.8	2.2			1.7	Debt/Worth		1.5		1.7		1.5		1.5		1.7	
4.1	2.8			3.8			3.0		4.4		4.0		3.9		3.8	
43.2	29.6			38.9	% Profit Before Taxes/Tangible		36.0		44.7		53.1		49.9		38.9	
(65) 21.8 (23)	20.8		(89)	21.6	Net Worth		(64) 22.1	(68)	25.7	(93)	21.8	(94)	23.6	(89)	21.6	
4.2	5.9			5.3			10.9		11.1		11.1		13.2		5.3	
15.1	10.5			13.9	% Profit Before Taxes/Total		15.1		16.3		17.0		18.9		13.9	
8.1	7.6			7.9	Assets		9.6		9.5		8.4		8.7		7.9	
1.8	.7			1.8			2.8		3.7		3.1		4.5		1.8	
61.8	31.0			55.9			43.8		42.4		43.2		40.1		55.9	
26.0	15.1			19.3	Sales/Net Fixed Assets		17.1		18.7		17.5		15.6		19.3	
13.3	7.6			10.8			7.0		8.0		8.4		8.6		10.8	
3.6	3.0			3.5			2.9		3.3		3.3		3.2		3.5	
2.7	2.5			2.6	Sales/Total Assets		2.4		2.5		2.5		2.5		2.6	
1.9	2.2			2.0			1.8		1.9		1.9		1.8		2.0	
.8	.7			.8			.6		.5		.6		.6		.6	
(62) .9 (23)	1.4		(86)	1.1	% Depr., Dep., Amort./Sales		(55) 1.2	(70)	1.0	(90)	1.0	(92)	1.3	(86)	1.1	
1.7	1.9			1.8			1.9		1.9		1.7		1.9		1.8	
1.6	1.3			1.5			1.5		1.8		1.6		1.4		1.5	
(56) 2.2 (15)	3.6		(71)	2.6	% Lease & Rental Exp/Sales		(46) 3.7	(55)	3.4	(73)	3.6	(71)	3.6	(71)	2.6	
5.6	8.4			6.1			7.0		6.9		5.9		6.2		6.1	
3.6				3.0			2.7		2.9		3.3		3.3		3.0	
(43) 6.2			(51)	4.9	% Officers' Comp/Sales		(39) 5.5	(43)	5.9	(49)	5.5	(48)	5.0	(51)	4.9	
10.2				8.3			9.5		11.5		10.1		9.8		8.3	
71291M	148612M	23065M		242968M	Net Sales (*)		250124M		147793M		204853M		s26644M		242968M	
26056M	64627M	11732M		102415M	Total Assets (*)		116642M		66084M		99720M		154969M		102415M	

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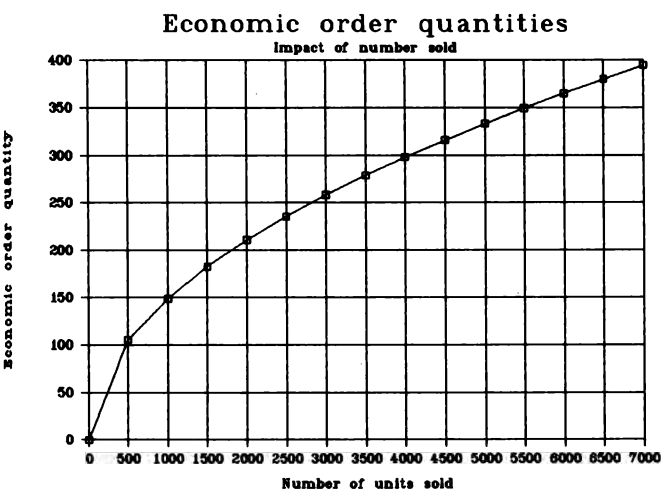
M = thousand MM = million

See Pages 1 through 1.1 for Explanation of Ratios and Data

Controlling performance for higher profits. *In Chapter 7, you'll see how to track changes over a period of time to reveal trends and how to compare your own firm's performance to similar businesses in the same industry.*

When you finish Chapter 7, much of the contents of this book will be on your computer, ready for you to use. You'll have a background in using financial statements and ratios and a collection of customized computer templates, or forms. Most important, you'll know how to use your computer and financial statements to measure the condition and performance of your company. And once you know how your business is doing, you can explore (again using your computer) how to make it better, more effective, more profitable. You can make decisions aimed at improving and controlling your firm's performance for higher profits.



2 The computer system you need

Computers don't decide; managers decide. Computers (so far) don't have feelings or form opinions; people do. But computers are such effective decision support tools because of their remarkable ability to process information for managers. With speed and accuracy, computers can store, sort, summarize, manipulate, and print out information.

Because a computer can handle information in so many ways, it is a general-purpose machine. That distinguishes a computer from a single-purpose machine, such as a typewriter. The computer as a data processor has many capabilities, and you determine its specific function by the software you use.

Software is the set of directions called a *program* that tell a computer what to do through specially coded instructions. If you want a computer to perform business functions, you can use prepackaged business software, such as the VisiCalc program which is used with this book. That software converts a personal computer into a "business computer," quickly and completely. And you don't have to know much about computers, or anything about programming languages, to use it effectively.

But software is only part of the complete computer system you will need.

A system is composed of interacting or interdependent parts that work together to form a whole, such as a stereo system or an accounting system. In a computer system, it is important that each part work both on its own *and* in conjunction with other parts. Otherwise, the system is nonoperational. With the rapid growth of computer technology, a variety of competing and sometimes incompatible products are on the market. They don't all work together and even when they should, there are few people who can explain how to make them do so. This situation is called the "compatibility problem."

If you have a computer system, you may have already encountered the compatibility problem. For instance, a computer company representative can tell you everything you want to know about the computer; the software company spokesman can explain everything about the software; and a person at the printer company can give advice about its printer. But there are only a few people who can tell you how the software running on your computer works with your printer. Obviously, you can't resolve a compatibility problem on your own. Your only option is to avoid the problem.

The best way to do that is to select and use brand products with proven customer support. Unless you are an experimenter or a hobbyist with a great deal of time to spare, always follow the crowd in choosing equipment and software. Let others do your testing, and only buy products that have passed a threshold of consumer acceptance. Also, work with a reliable dealer. Though the computer field is growing too rapidly for anyone to comprehend it completely, a knowledgeable dealer is a useful guide.

The computer system you need for using this book is composed of reliable products that have passed the consumer test and that work together. We've selected the essentials, the bare minimum you need to form a functioning system. We've also suggested some additional accessories that expand the capabilities of a system, but they are optional. For further advice on accessories, consult your dealer.

There are six essential parts to the computer system you need (see diagram). Each part is discussed briefly here, and the major ones are covered in more detail later in this chapter.

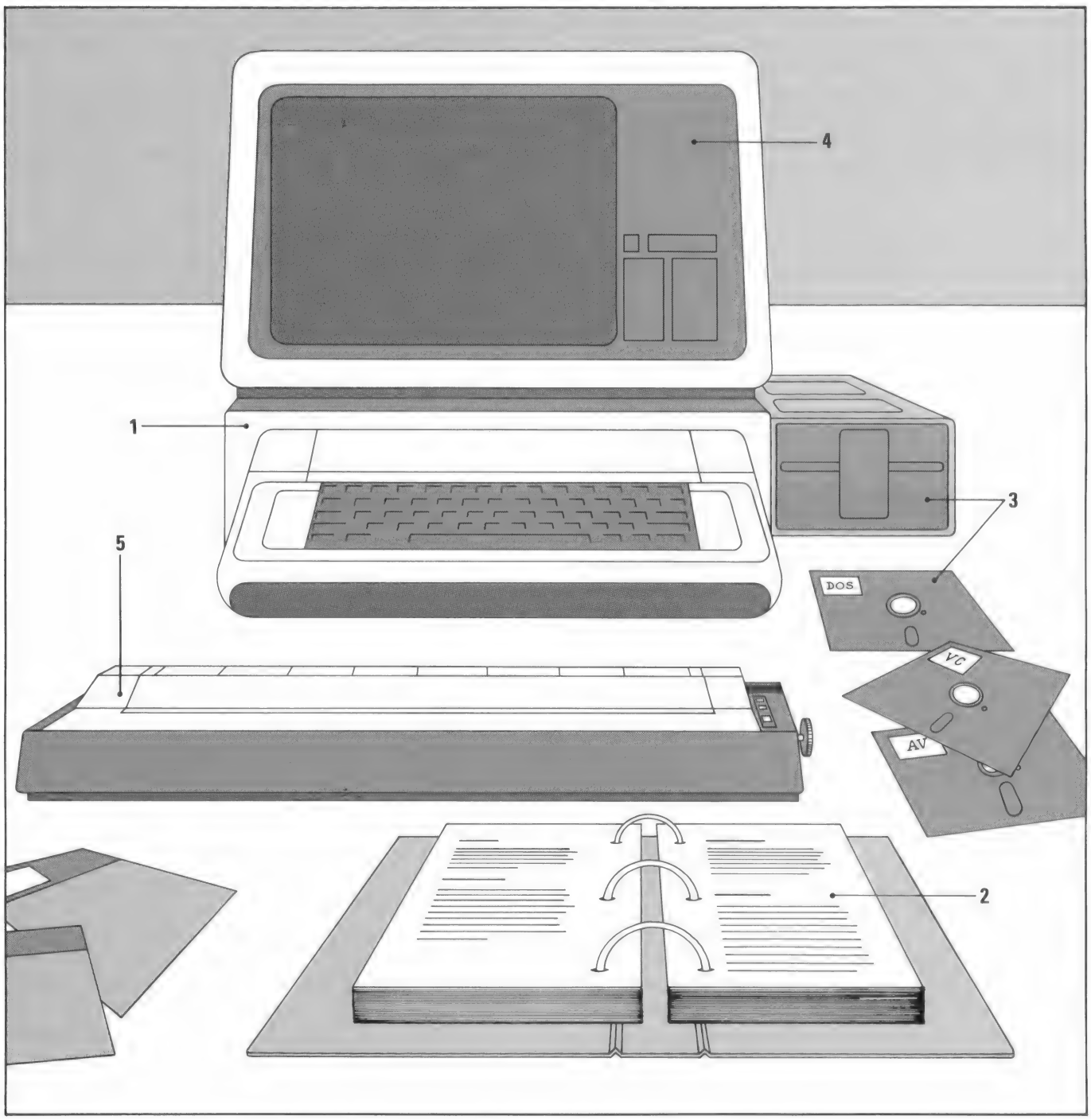
1 An Apple computer: Any Apple will do: an Apple II, II Plus, IIe, or Apple III. Most Apples have the memory (48K) required to run the VisiCalc software. However, you need 64K to build the financial statement template in Chapter 6. Therefore, if you use an Apple II or II Plus, you also need an Apple language card (or a similar product from another manufacturer). A language card inserted into these Apple models expands their memory to the needed 64K. If you use an Apple III, which comes with a minimum of 96K, you don't need a language card.

2 VisiCalc or VisiCalc Advanced Version program: The VisiCalc program is business software that comes in the form of a program diskette (two diskettes for the Advanced Version) with an accompanying instruction manual. It is available for all Apple computers that have at least 48K, but you need the version that is compatible with your model. With an Apple II or II Plus, use the VisiCalc program (which we will refer to as the regular version). The VisiCalc Advanced Version program will not run on these Apple models. With an Apple III, you have a choice. You can use the regular version or the Advanced Version. (In fact, the VisiCalc Advanced Version program was designed initially for the Apple III.) But, to run the Advanced Version, the Apple III must have a memory capacity of 128K. If your Apple III has only 96K and you want to use the Advanced Version, your dealer can upgrade it to the necessary 128K.

3 Floppy disks, disk drive, and Disk Operating System: A floppy disk (diskette) is a round, flat, rotating sheet of plastic coated with a magnetic surface that records and stores information. You need two blank 5 1/4-inch diskettes, one for saving the example to be entered in Chapters 3, 4, and 5, and the templates in Chapter 6, and another to use for a backup copy of the information.

You also need one disk drive that works with your Apple model. This drive is operated by the computer, and

The parts of the computer system you need



allows the computer to record or pick up information from the disk, or diskette. The diskette spins in the disk drive while a head on the disk drive records and reads bits of information on the disk surface.

To make backup copies, format disks, print catalogs of files, and for other "housekeeping" chores you need a disk operating system, software that comes with the computer in a diskette, or floppy, form. When loaded into the computer's memory, a disk operating system tells the disk drive what to do and, in general, manages the computer's memory and files. Different computers use different disk operating systems. For the Apple II or II Plus, you need a system called *DOS*. With the Apple III, you need a system called the Sophisticated Operating System, or *SOS*.

4 Monitor: A monitor displays information stored in the computer's memory. You can choose among different styles. For the purposes of this book, a black-and-white monitor is sufficient. However, a green-and-white or amber monitor is easier on the eyes and not much more expensive. Color monitors are expensive, and some models give poor resolution when used for financial models with many numbers. Television sets have even worse resolution, and although they can be used eye strain may result if much time is spent using one.

5 Printer: A printer is a typewriter-like machine that prints out reports just as they appear on the VisiCalc screen display. Although a printer isn't absolutely necessary, it is extremely helpful for sharing information with others or troubleshooting potential problems. It can print out an entire VisiCalc worksheet, while the screen may display only a part of the worksheet at any one time.

Printers come in two standard forms: 80 or 132 characters wide. The 80-character model uses standard 8 1/2-inch-wide paper. The 132-character model is more popular for business purposes and is sometimes called the standard business printer. You can use either an 80- or 132-character printer with this book. Many high-quality printers are available at a cost of a few hundred to a few thousand dollars. We suggest that you discuss these options with a dealer and actually take your computer in to have the dealer install the printer to make sure it does work with your system.

6 Reference books: Although books aren't a part of a computer system per se, they are so helpful in setting up and operating a system that we have included them here. In fact, we assume that you have already gone through the computer user's guide and VisiCalc manual that go with whatever Apple model and VisiCalc version you plan to use (or are using). It is impossible to duplicate in this book all the instructional material found in these manuals. However, throughout this book, we have presented those procedures that you really need to know and use as you progress through the steps.

A note on setting up the system

You may already have your computer system set up and running, but if you don't, we advise that you follow this rule: Work with a reliable dealer. You already know, perhaps from a frustrating or expensive mistake, that the parts of your system must be compatible. We advise that you have a dealer assemble the system for you and show you how to operate it. The same advice applies to optional accessories. You may have to pay a little more up front for this type of service, but it is well worth the extra cost. Your time is worth money and a dealer can help assure that it isn't wasted back in your office as you try to figure out how the parts are supposed to fit together.

Apple computers

A variety of Apple computers are available that are suitable for use in a business environment. The choice includes the Apple IIe, an enhanced version of the Apple II Plus, which was the first successful business computer but is no longer in production, and the Apple III.

When choosing your first computer, or upgrading to a more sophisticated model, you should seriously consider certain key features before making your choice. The most important ones are features that affect memory and storage, features that affect data input, and features that affect the screen display.

Memory and storage

Memory capacity (called RAM for *R*andom *A*ccess *M*emory and measured in K's for Kilobytes) determines how much data can be stored in the computer. When the computer is used with the VisiCalc software, the amount of memory your computer has determines how much of the spreadsheet is available. (The VisiCalc program can have up to 63 columns and 254 rows.) The VisiCalc program is stored in memory along with any data you enter. For instance, if your computer has 64K of memory and you load the VisiCalc program, you will have about 33K left to work with. As you enter a worksheet, more and more memory is used. The VisiCalc screen display has a memory indicator (see page 11) which gives you a continual indication of how much memory is still available. When you run out of memory, this indicator will flash **M** to tell you that the worksheet cannot be expanded further.

Disk storage capacity, like the computer's internal memory, is measured in K's. The larger the number of K's available, the more files can be stored on a disk. Having large amounts of disk storage capacity is helpful for a number of reasons: it reduces the number of disks and disk storage space you need; it reduces problems about keeping track of disks; and it reduces the chances of encountering **DISK FULL** messages when you try to save a worksheet (see TIPS on "How to overcome a DISK FULL message" on page 38.)

Operating systems generally aren't important to the user since the system itself is relatively invisible. They mostly affect what software you can run on a machine and with what computers you can interchange disks. The DOS system for the Apple II, for instance, is different from the SOS system on the Apple III. However, you can load Apple II or Apple II Plus but not Apple IIe disks on an Apple III because the designers built in an "emulation mode." Disks designed for or files saved using an Apple II DOS system can be used in most cases on the Apple IIe because the operating systems are so similar.

Data input

Numeric keypads are separated from the regular keyboard and can speed the entry of numbers into worksheets. Organized much like a calculator keypad, they put all of the digits from 0 to 9 in close proximity so that you don't have to enter numbers with the row of numeric keys at the top of the keyboard. Function keys can also be "programmed" so they will perform functions that you find repetitive. When programmed they will store and execute a series of keystrokes when pressed (in conjunction with the control key).

Arrow keys are used to move the cursor around on the screen. Some Apple models have four arrow keys which move the cursor up, down, left, or right. Other models have only two keys and they must be used in combination with the space bar to move the cursor in all four directions.

The screen display

The number of columns displayed on the screen at one time determines how much of the worksheet you can see without having to scroll the screen. Some Apple models come with a 40-column screen display and others with 80 columns.

Upper and lower case letters give you a choice when entering labels. Some Apple models have only upper case letters while others have both upper and lower case.

Comparison chart

Model	Internal memory (RAM)	Disk storage capacity	Arrow keys	Function keys	Columns displayed	Upper and lower case
Apple II	16-64K	140K	2	No[1]	40[2]	Upper[3]
Apple II Plus	16-64K	140K	2	No[1]	40[2]	Upper[3]
Apple IIe	64-128K	140K	4	Yes[4]	40[2]	Both
Apple III	128-256K	140K	4	Yes	80	Both

[1] Function keys can be added to these models. The accessory is available from a number of manufacturers. Check with your dealer.

[2] These models can display 80 columns by adding accessories. Check with your dealer.

[3] These models can display upper and lower case with the proper accessory added. Check with your dealer.

[4] With the Apple IIe, the function keys are not "programmed" by the user. Their functions are programmed into some of the software developed for the computer.

VisiCalc: Your electronic worksheet

The VisiCalc program, an electronic worksheet, takes the work out of working with numbers. Using its automatic calculation feature, you can instantly see the results of changing a number. You don't have to sit down with pen and paper or a calculator to figure out possible results; the VisiCalc program does it for you. That shortens the time between "cause" and "effect": you can analyze the financial effect of decisions before you make them, on your electronic worksheet. Put the VisiCalc program to work for you and its capabilities expand your capabilities: you can work faster, more efficiently, more effectively.

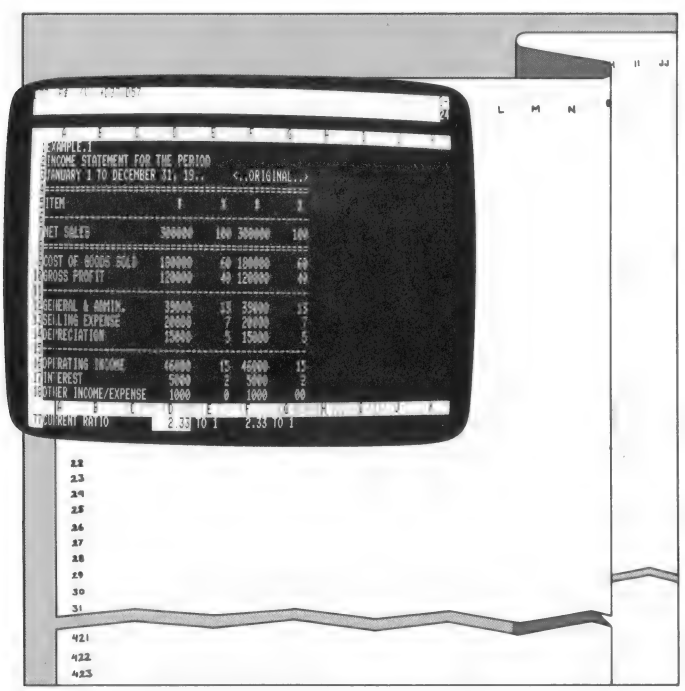
The VisiCalc program is widely acknowledged to be the software that made the personal computer a business tool. It is designed to perform a variety of business functions for business people, most of whom don't have the time, desire, or skill to write their own computer programs. And because the VisiCalc software exists, they don't have to. In this book, you'll be using the VisiCalc program to build financial statements, calculate ratios, and explore changes on the statements. Later, you'll be shown how to adapt or customize your own financial statements using the VisiCalc program.

You can use either the VisiCalc or the VisiCalc Advanced Version program with this book, which includes instructions for both. Instructions for the regular version are given first, and if different instructions are needed for the Advanced Version, these are indicated by the symbol [AV]. The Advanced Version has features that speed data entry, improve data output, and help protect your work. Throughout the book, the right time to use those features is pointed out, and you are shown how to use them.

Both versions of the VisiCalc program can store and manipulate a lot of information in their 63 columns and 254 rows. The number of rows and columns you can actually use depends upon the amount of memory your computer has. In this book, you'll use up to 11 columns and 146 rows for the financial statements and ratios.

As you work at the computer, a VisiCalc screen like the one illustrated opposite will appear on the computer monitor.

The VisiCalc screen display

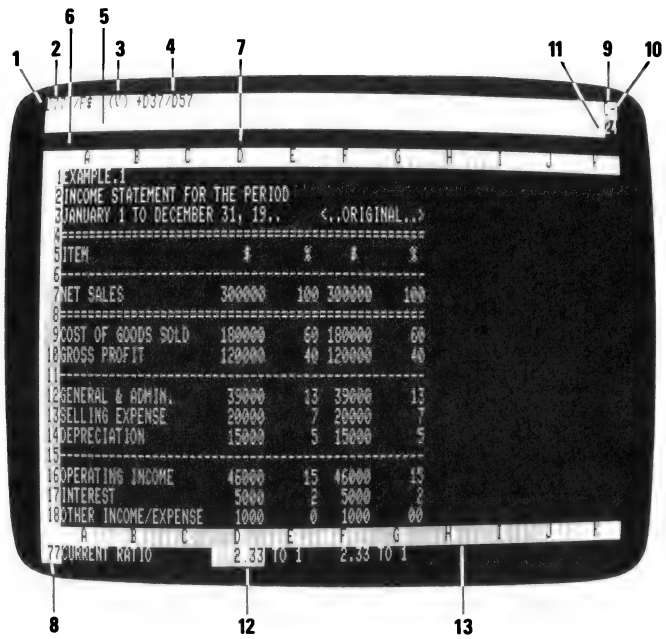


The screen provides a "window" on your worksheet by constantly displaying the information you have entered on the computer. However, the screen only displays part of your electronic worksheet at a time. To reveal the rest of the worksheet, you have to "scroll" it by using the arrow keys → or the GO TO command (>). The Apple II and II Plus have a 40-character-wide screen display that can be upgraded to 80 characters with accessories available from your dealer. Other Apple models have an 80-character screen display without the use of accessories.

Photos of VisiCalc screens or printouts throughout the book show you what your worksheet should look like at each step. Screen photos and printouts provide constant visual checks that help you see whether you are correctly entering the data. All screen photos show the VisiCalc screen. The screen display for the Advanced Version will look the same except column A will be wider (to speed the process of entering labels) and the dollar signs ($), commas separating thousands, negative values in parentheses, and percent signs (%) can be integrated (to make the reading of values easier).

If you have a printer, you can get a copy of your worksheet at any point. See pages 150–152 in Chapter 6 and your VisiCalc manual for detailed instructions on how to print a worksheet.

The VisiCalc screen display in detail



The VisiCalc screen display that appears when you load the program is packed with information. Here is a brief review of what appears on the screen and an explanation of how this information is used throughout this book.

***1* Cell contents line:** *This line shows the contents of the cell in which the cursor is positioned. If you want to check formulas that don't normally appear on the screen display (only their calculated value does), just move the cursor to the cell in question and look at the cell contents line where the formula will appear.*

***2* Cell coordinate:** *A cell is located at the intersection of a row and column. When the cursor is placed in a cell, the coordinates of that cell will appear on the cell contents line with the column letter followed by the row number.*

***3* Entry type:** *This indicates the type of entry in the cell in which the cursor is positioned. There are three types of entries: labels (indicated by (L)), values and formulas (indicated by (V)), and repeating labels (indicated by /-).*

***4* Cell contents:** *This part of the cell contents line displays the actual contents of the cell in which the cursor is placed. There will be times when you see more on this line than you will see in the cell itself (see page 25).*

***5* Prompt line:** *This line is used by the VisiCalc program to "prompt" you to make certain choices. You will see choices presented here whenever using VisiCalc commands, such as those used when saving, loading, or replicating.*

***6* Edit line:** *Most VisiCalc commands are typed on the keyboard and then entered by pressing the return key. Until those commands are entered with the return key, they can be seen on this line. If you use the "Edit" command (/E) to revise a label or formula, the contents of the cell in which the cursor was positioned at the time the edit command was entered will also appear on this line.*

***7* Column letters:** *These letters indicate the columns into which the VisiCalc program divides the worksheet. They are always given first when identifying the position of a cell's coordinate, for instance, D7.*

***8* Row numbers:** *Numbers identify the rows into which the VisiCalc program divides the worksheet.*

***9* Order of calculation:** *VisiCalc will always calculate your worksheet from the top of the sheet to the bottom. You can, however, choose whether it calculates column by column across the sheet, or row by row down it. This choice can be important in many complicated worksheets, but in this book it should always be set to its default setting of (C) for column. To change the order of calculation, type /**GOR** (for row) or /**GOC** (for column).*

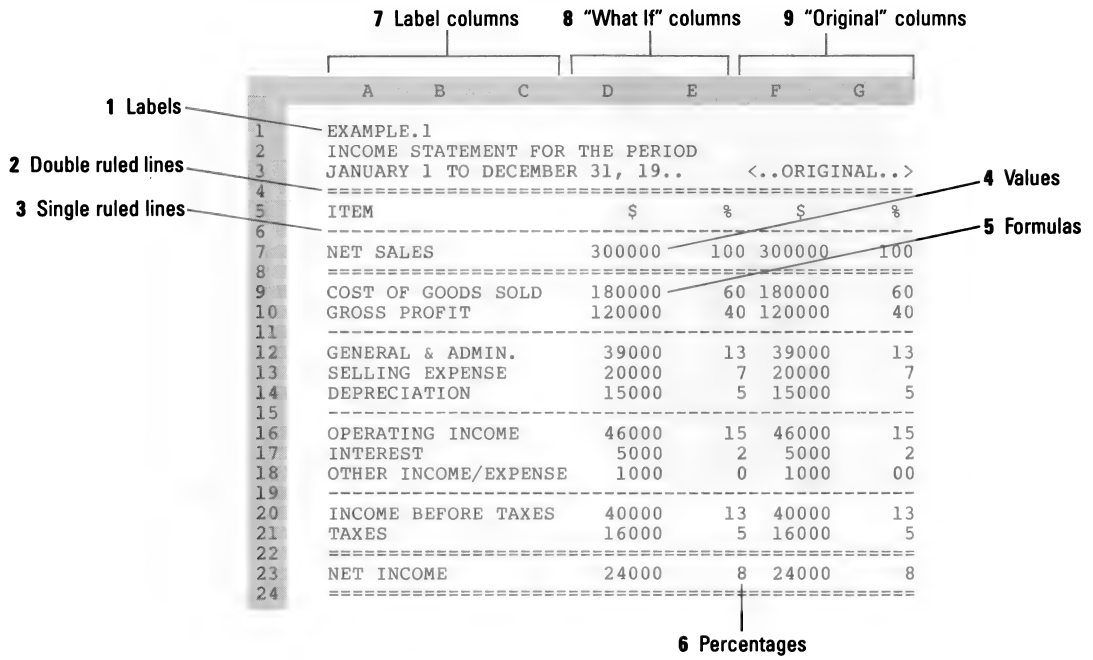
***10* Apple II cursor direction indicator:** *Since the Apple II and II Plus have only two arrow keys, they must be used in conjunction with the space bar to move the cursor in four directions. When the space bar is pressed this indicator will change its position from up and down to sideways or vice versa. The direction it points indicates the direction the cursor will move when you press an arrow key, either vertically or horizontally.*

***11* Memory indicator:** *This acts like the fuel gauge in an automobile, except that it tells you how much memory is available to work with. As you load the VisiCalc program you can watch as the number gets smaller as the program loads. As you begin building a worksheet it will continue to get smaller and smaller. If you approach the limits of memory, it will first read 0; then, a flashing M indicates you have no memory left.*

***12* Cursor:** *This is moved around the worksheet using the arrow keys or the GO TO command. You can make entries only in the cell in which the cursor is placed. When using the replicate, DIF,™ and print commands, you can also "point" with the cursor to indicate the top left and lower right cells in the range desired.*

***13* Window:** *When the worksheet is larger than the display screen you can see different sections at the same time by using windows in the display. Windows can be vertical or horizontal and one side can be used to display one section of the worksheet while the other side displays an entirely different section.*

The VisiCalc worksheet



	A	B	C	D	E	F	G
1	EXAMPLE.1						
2	INCOME STATEMENT FOR THE PERIOD						
3	JANUARY 1 TO DECEMBER 31, 19..					<..ORIGINAL..>	
4	==========	==========	==========	==========	==========	==========	==========
5	ITEM			$	%	$	%
6	----------	----------	----------	----------	----------	----------	----------
7	NET SALES			300000	100	300000	100
8	==========	==========	==========	==========	==========	==========	==========
9	COST OF GOODS SOLD			180000	60	180000	60
10	GROSS PROFIT			120000	40	120000	40
11	----------	----------	----------	----------	----------	----------	----------
12	GENERAL & ADMIN.			39000	13	39000	13
13	SELLING EXPENSE			20000	7	20000	7
14	DEPRECIATION			15000	5	15000	5
15	----------	----------	----------	----------	----------	----------	----------
16	OPERATING INCOME			46000	15	46000	15
17	INTEREST			5000	2	5000	2
18	OTHER INCOME/EXPENSE			1000	0	1000	00
19	----------	----------	----------	----------	----------	----------	----------
20	INCOME BEFORE TAXES			40000	13	40000	13
21	TAXES			16000	5	16000	5
22	==========	==========	==========	==========	==========	==========	==========
23	NET INCOME			24000	8	24000	8
24	==========	==========	==========	==========	==========	==========	==========

Your worksheet will build as you progress through the chapters covering the income statement, balance sheet, and ratios. As you enter the example, you will encounter expressions that are explained here.

1 Labels: *Labels identify the worksheet and individual parts of it.*

2 Double ruled lines: *These divide worksheets into major sections to make them easier to read. The lines are made by using the equal (=) key.*

3 Single ruled lines: *These also separate major sections of the worksheet. They are entered using the minus (−) key.*

4 Values: *Values are numbers entered either directly from the keyboard, e.g., 1000, or by entering a formula, e.g., 10*100.*

5 Formulas: *Formulas can either be self-contained, e.g., 10*100, or used to manipulate the contents of other cells, e.g., 10*D9.*

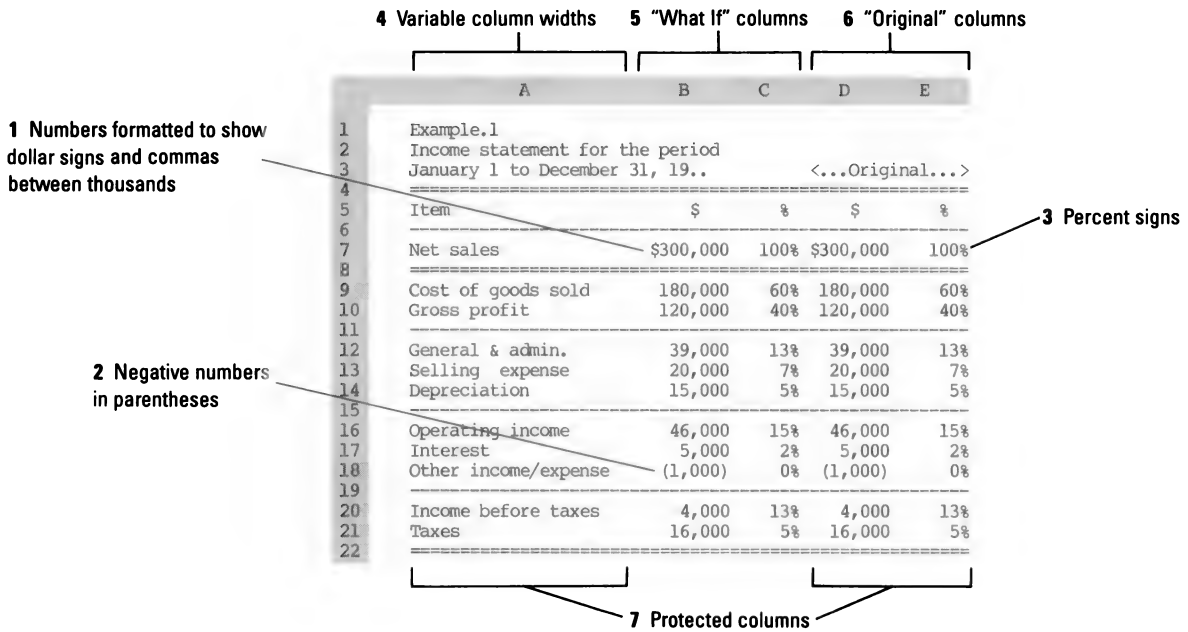
6 Percentages: *Percentages are arrived at by dividing one value by another. In this book the result of that division is multiplied by 100 to display the percentage as a whole number, such as 25% rather than as a decimal, such as .25.*

7 Label columns: *These are the first three columns; they identify the contents of rows on the worksheet.*

8 "What If" columns: *When you explore "What If" questions, you enter changed data into these columns of the worksheet. Whenever a change is made, the entire worksheet will automatically recalculate every value so that you immediately see the results of your change.*

9 "Original" columns: *These are the columns used to evaluate the results of the "What Ifs" you explore. These columns reflect the original state of the example before any changes were made and simplify the evaluation of changes that are made.*

The VisiCalc Advanced Version worksheet


4 Variable column widths
5 "What If" columns
6 "Original" columns
1 Numbers formatted to show dollar signs and commas between thousands
2 Negative numbers in parentheses
3 Percent signs
7 Protected columns
A B C D E
Example.1
Income statement for the period
January 1 to December 31, 19..
<...Original...>
Item $ % $ %
Net sales $300,000 100% $300,000 100%
Cost of goods sold 180,000 60% 180,000 60%
Gross profit 120,000 40% 120,000 40%
General & admin. 39,000 13% 39,000 13%
Selling expense 20,000 7% 20,000 7%
Depreciation 15,000 5% 15,000 5%
Operating income 46,000 15% 46,000 15%
Interest 5,000 2% 5,000 2%
Other income/expense (1,000) 0% (1,000) 0%
Income before taxes 4,000 13% 4,000 13%
Taxes 16,000 5% 16,000 5%

The anatomy of an Advanced Version worksheet is different from the regular VisiCalc worksheet. For instance, since the Advanced Version allows you to change column widths, we have set column A wider than other columns throughout this book. Since columns A through C for VisiCalc users are just column A for Advanced Version users, column letters will be different for the two versions. Therefore, in the instructions given throughout this book, the VisiCalc column is given first and the corresponding VisiCalc Advanced Version column is included in parentheses — for example, D(B).

1 Numbers formatted to show dollar signs and commas between thousands: *You can use this feature to label some or all values on the worksheet with a $ sign. Commas can make large numbers easier to read. With this feature, you can have "one million dollars" presented as $1,000,000 instead of 1000000.*

2 Negative numbers in parentheses: *This feature allows you to show a negative value, such as −1,000, in parentheses so that it stands out more: (1,000).*

3 Percent signs: *This option allows you to label some or all values with a % sign. It also automatically multiplies the result by 100 to display the percent as a whole number. When a cell is formatted using this feature, the percentage value is entered by typing it as a decimal (.2) but it is displayed as a whole number (20) followed by a percent sign.*

4 Variable column widths: *This feature allows you to choose the width of each column individually.*

5 "What If" columns: *These columns work the same as the "What If" columns described earlier. The only difference in the Advanced Version is that they fall in columns B and C rather than D and E. This is because the first three columns in the regular version have been set so that they are only one column for the Advanced Version.*

6 "Original" columns: *These columns also work like the ones described earlier. However, for Advanced Version users they fall into columns D and E instead of F and G because of the width of column A.*

7 Protected columns: *This valuable feature acts like a lock on a cell (data entry space). It prevents new data from being entered into a cell that already contains data. Thus it helps protect against accidental erasures of information.*

How your example will work

The worksheet you will build in Chapters 3, 4, and 5 contains an example income statement and balance sheet. Both of these statements are linked to a section that automatically calculates ratios commonly used throughout the business and banking communities to evaluate these two statements. The example is an excellent learning tool, since you will be guided through a series of "What If" questions and instantly see the overall impact of individual decisions you might make. Here is how the finished example will work:

1 You enter a change, for instance, an increase or decrease in net sales.

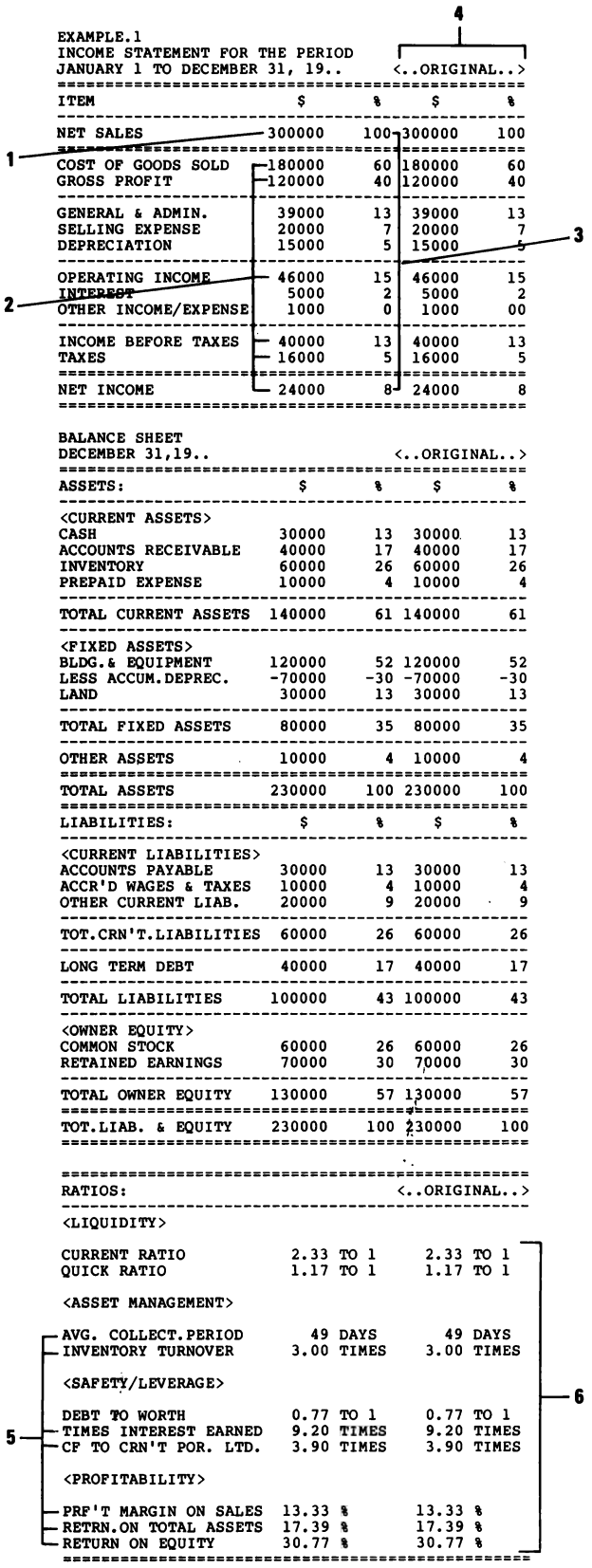
2 Formulas entered in the statement automatically recalculate the outcome of the change throughout the example. In this case, cost of goods sold, gross profit, operating income, income before taxes, taxes, and net income would all change instantly.

3 Operating ratios, the percentage of each line item in relation to net sales, will also instantly be recalculated to reflect the change you made and then the rest of the worksheet will be recalculated.

4 The original columns remain unaffected by any changes you make. These unchanging columns provide a standard by which the impact of changes you enter can be compared.

5 Ratios affected by the change you made in (1) above will also automatically change. You can instantly see the effects of changes on the income statement and balance sheet as they would be reflected in your ratios. Since these ratios are frequently used by banks, investors, and managers to evaluate the performance and condition of a firm, your understanding of how they work and what affects them is important. The example provides a clear and immediate understanding.

6 The original column in the ratios section, like the original columns in the income statement and balance sheet, remains unchanged. This provides you with a convenient standard of comparison against which you can measure the effect of changes you make.



EXAMPLE.1				
INCOME STATEMENT FOR THE PERIOD				
JANUARY 1 TO DECEMBER 31, 19..			<..ORIGINAL..>	
ITEM	$	%	$	%
NET SALES	300000	100	300000	100
COST OF GOODS SOLD	180000	60	180000	60
GROSS PROFIT	120000	40	120000	40
GENERAL & ADMIN.	39000	13	39000	13
SELLING EXPENSE	20000	7	20000	7
DEPRECIATION	15000	5	15000	5
OPERATING INCOME	46000	15	46000	15
INTEREST	5000	2	5000	2
OTHER INCOME/EXPENSE	1000	0	1000	00
INCOME BEFORE TAXES	40000	13	40000	13
TAXES	16000	5	16000	5
NET INCOME	24000	8	24000	8
BALANCE SHEET				
DECEMBER 31,19..			<..ORIGINAL..>	
ASSETS:	$	%	$	%
<CURRENT ASSETS>				
CASH	30000	13	30000	13
ACCOUNTS RECEIVABLE	40000	17	40000	17
INVENTORY	60000	26	60000	26
PREPAID EXPENSE	10000	4	10000	4
TOTAL CURRENT ASSETS	140000	61	140000	61
<FIXED ASSETS>				
BLDG.& EQUIPMENT	120000	52	120000	52
LESS ACCUM.DEPREC.	-70000	-30	-70000	-30
LAND	30000	13	30000	13
TOTAL FIXED ASSETS	80000	35	80000	35
OTHER ASSETS	10000	4	10000	4
TOTAL ASSETS	230000	100	230000	100
LIABILITIES:	$	%	$	%
<CURRENT LIABILITIES>				
ACCOUNTS PAYABLE	30000	13	30000	13
ACCR'D WAGES & TAXES	10000	4	10000	4
OTHER CURRENT LIAB.	20000	9	20000	9
TOT.CRN'T.LIABILITIES	60000	26	60000	26
LONG TERM DEBT	40000	17	40000	17
TOTAL LIABILITIES	100000	43	100000	43
<OWNER EQUITY>				
COMMON STOCK	60000	26	60000	26
RETAINED EARNINGS	70000	30	70000	30
TOTAL OWNER EQUITY	130000	57	130000	57
TOT.LIAB. & EQUITY	230000	100	230000	100
RATIOS:			<..ORIGINAL..>	
<LIQUIDITY>				
CURRENT RATIO	2.33 TO 1		2.33 TO 1	
QUICK RATIO	1.17 TO 1		1.17 TO 1	
<ASSET MANAGEMENT>				
AVG. COLLECT.PERIOD	49 DAYS		49 DAYS	
INVENTORY TURNOVER	3.00 TIMES		3.00 TIMES	
<SAFETY/LEVERAGE>				
DEBT TO WORTH	0.77 TO 1		0.77 TO 1	
TIMES INTEREST EARNED	9.20 TIMES		9.20 TIMES	
CF TO CRN'T POR. LTD.	3.90 TIMES		3.90 TIMES	
<PROFITABILITY>				
PRF'T MARGIN ON SALES	13.33 %		13.33 %	
RETRN.ON TOTAL ASSETS	17.39 %		17.39 %	
RETURN ON EQUITY	30.77 %		30.77 %	

Disks: Anatomy and care

Disk anatomy

Although a diskette can perform amazing functions, its anatomy is quite simple. Since reference is made in this book to parts of a diskette, a brief review of diskette anatomy is included here. With this book, you'll be using two forms of diskettes: data or storage diskettes, and a VisiCalc Program (and, for the Advanced Version, a Loader) diskette. The anatomy of a storage diskette is illustrated at right. A VisiCalc Program diskette has the same anatomy as a storage diskette except it does not have a write-protect cutout (#10 on diagram).

1 STORAGE ENVELOPE. This envelope protects the diskette from scratches, dust, and fingerprints. With better diskettes, the envelope is also treated to eliminate the static buildup that attracts abrasive grit. Always store a diskette in its storage envelope.

2 OUTER COVER. The black plastic outer cover protects the diskette while allowing it to spin smoothly. The cover is permanently sealed for safety, and contains lubricants and cleaning agents that prolong the life of the diskette. Always grasp a diskette only by this outer cover.

3 LABELS. A diskette comes with a manufacter's label on it. A user's label can be added to identify and number the diskette for easy reference.

4 OVAL OPENING. This is a space where an operating disk drive head picks up and records information on the diskette. There is an oval opening on both the top and bottom sides.

5 TOP SIDE. On a single-sided diskette, the top side is the one with the manufacturer's label on it. A diskette is inserted into the machine top-side-up, with the oval opening directed toward the machine.

6 THE ACTUAL DISKETTE. The round, flexible plastic diskette has a magnetic surface that stores information in a manner somewhat analogous to that of a tape recorder. This actual, or inner, diskette can be seen through three openings in the disk's outer cover.

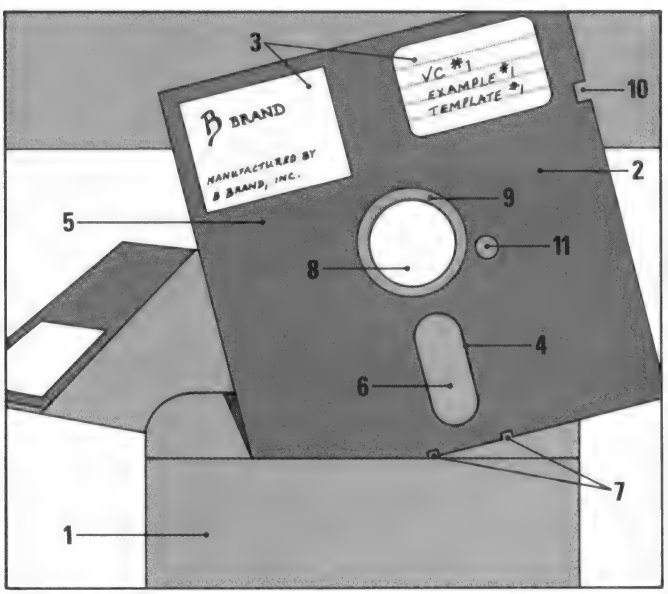
7 ALIGNMENT NOTCHES. These two notches align the diskette squarely over the disk drive head when the diskette is inserted into the machine.

8 CENTRAL HOLE. The disk drive unit fits into the central hole to engage and rotate the diskette.

9 HUB RING. This plastic, protective ring, normally not on a diskette, can be glued on to the rim of a diskette's central hole to prevent the hole from deteriorating as the drive unit repeatedly rotates the diskette.

10 WRITE-PROTECT CUTOUT. This notch cues the disk drive whether or not to store a file on the diskette. When the cutout is left open, the disk drive "senses" this and will store a file (on command) on the diskette. If you cover the cutout with tape, the disk drive will not accept new files on the diskette until the tape is removed. That protects — or write-protects — the diskette. (A VisiCalc Program diskette does not have a write-protect cutout and is therefore permanently write-protected.)

11 RECORDING AND READING HEAD. This area is used by the disk drive head to locate disk sectors on which information is stored.



APPLE TIPS Cleaning the disk drive

This is one of those "housekeeping chores" it is easy to overlook. But you shouldn't overlook it forever or errors can occur as a result. The disk drive head operates like a tape recorder head. It picks up magnetic signals from the magnetic recording material (in this case the diskette), and in the process also picks up debris. If this debris isn't removed, it can begin to reduce the sensitivity of the head and its effectiveness in accurately recording and picking up data on or from the disk.

The easiest way to clean the head is with a special cleaning diskette. When it is inserted into the drive (just like a regular diskette) and the drive is operated for a while, this diskette cleans the head as it spins.

Diskette care and handling

Diskettes are relatively durable under ordinary conditions and have a useful life of about 40 hours spinning time. That life, however, can be shortened or abruptly ended by improper handling, while proper care assures that diskettes will accurately store and play back the data you need. Here are some useful tips on how to care for diskettes and assure them a useful, productive life.

Disk do's and don'ts

DO . . . Keep diskettes in their protective storage envelopes. The envelope reduces static buildup, which can attract dust that can scratch the diskette.

DO . . . Keep diskettes dry, away from sneezes, coffee, or anything wet. A wet diskette is a ruined diskette.

DO . . . Prevent diskettes from getting too hot or too cold. They should be stored at temperatures of 10–52° C (50–125° F). Temperature extremes can destroy a diskette's sensitivity, so treat them the same way you treat photographic film, i.e., keep them out of direct sunlight, don't leave them in a car exposed to temperature extremes, and so forth.

DO . . . Keep diskettes away from magnets. The magnets found in radio or stereo speakers, televisions, electric motors, air conditioners, novelty items, or even some cabinet latches can ruin diskettes' sensitivity. How far is "away"? A safe distance is at least two feet.

DO . . . Always make backup copies of important diskettes and store them a safe distance from your working area. Make sure that the same accident can't happen to both the diskette and its copy. Often the information on the diskette is worth much more than the diskette itself.

DO . . . Load the diskette into the drive unit gently. Otherwise, it may bend, center improperly, or rotate in an elliptical orbit that misses data.

DON'T . . . Touch a diskette's recording surface. Handle it only by its protective cover.

DON'T . . . Use a hard pen to write on a diskette label. Use only a felt-tip pen and light pressure.

DON'T . . . Leave a diskette in a nonoperating disk drive for more than an hour. Open the drive door and lift the drive head from the surface of the diskette.

DON'T . . . Insert or remove a diskette when the disk drive is running (when the red light is on).

DON'T . . . Bend, fold, or crimp diskettes.

One more note: Even with the best of care, diskettes can only last so long. Close to the end of their expected functional life, they show their own form of senility, by losing information or giving invalid commands. These are indications that it's time to replace the diskette which, ideally, you've already copied.

APPLE TIPS Housekeeping

When you first begin to use a personal computer, keeping track of your diskettes isn't a problem because you have so few of them. After a very short period, however, they can begin to overrun your desk, and you need a method for filing and storing them. Here are some tips for organizing your files so that you can find what you want . . . when you want it.

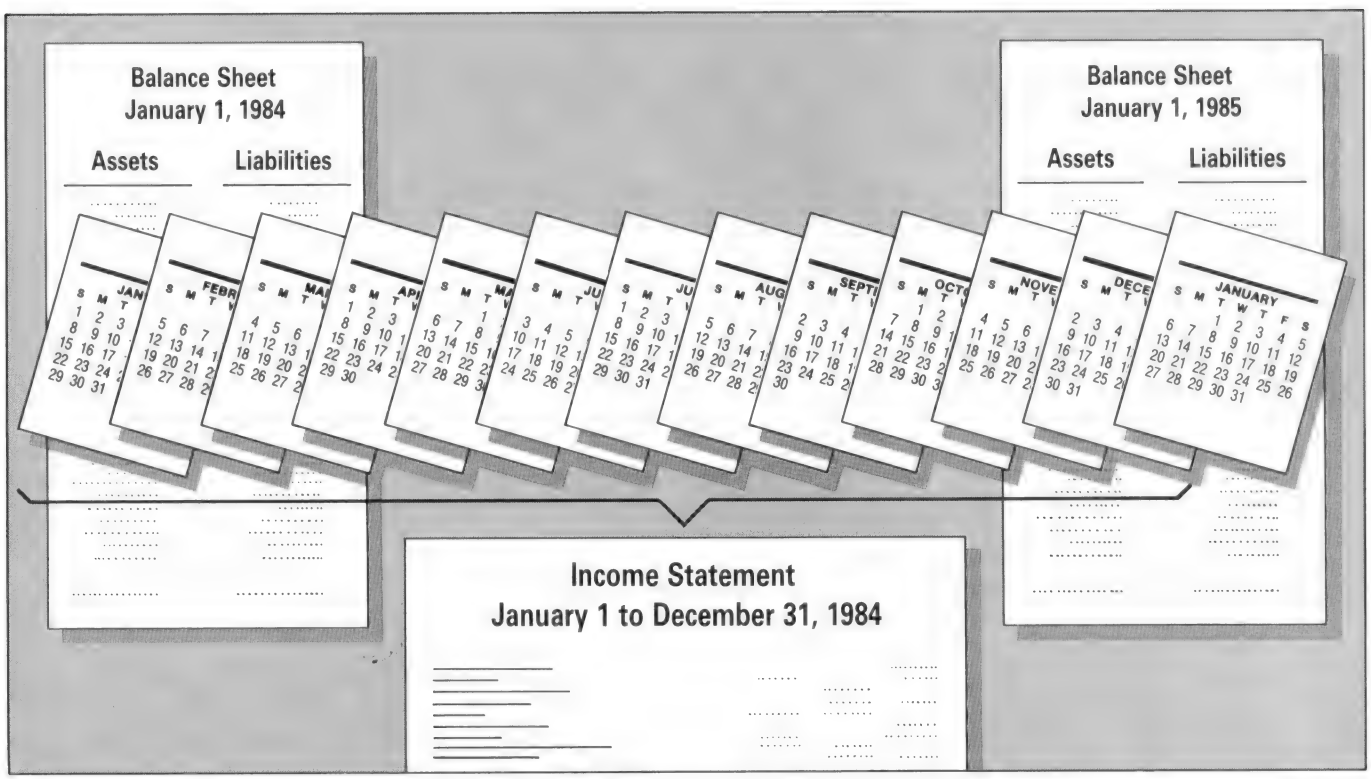
1 Assign volume numbers (and perhaps titles such as Sales or Budgets) to your diskettes when you initialize them. For the method of doing this, see your Apple owner's manual. Label each diskette with the same volume number. If you don't want to, or can't, use volume numbers on the diskettes, you can still assign each diskette a number on the label, for instance, VC #1, VC #2, etc., for VisiCalc diskettes.

2 Periodically print out the catalog, or list of files, and save the printout with the diskette. Some filing systems such as binders have a place for the catalog (also known as the directory) to be kept. You can easily keep things straight by matching the volume number on the catalog printout with the number you entered on the diskette label. If you didn't assign volume numbers when you initialized the diskettes, all of the disk catalogs will be printed out with the same volume number. To avoid confusion, catalog the diskettes one at a time, in sequential order, then number the printed-out catalog listings to match the diskettes.

3 The income statement

Performance, and profits, matter. An owner/manager must have some way to measure the degree of success or failure of the business and to show the net result of subtracting expenses from sales or revenue. The income (profit-and-loss) statement is the gauge most frequently used to determine profitability. Unlike the balance sheet, which shows the condition of the company at a given moment, the income statement shows the profit and/or loss over a period of time, usually a month, a quarter, or a year. In some ways, the balance sheet is like a still photograph, capturing a financial instant in time, while the income statement is like a silent motion picture, a financial feature, showing the results of actions that took place over a period of time. (See illustration below.)

You'll be using the computer to build and explore an income statement. To build the statement, you'll enter it part by part on the computer. Exploration begins when you see how to use the income statement as a working document to investigate possible changes in line items and the financial effect of those changes. That's what you'll be doing when you get to the "What If" section of this chapter. But first, you need to get the computer ready, and then enter a sample income statement.

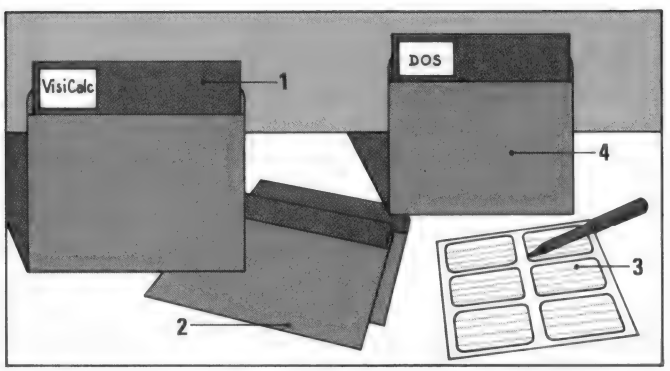


The detail needed for the actual income and expense accounts on the income statement will depend on the type and size of your business. Enough detail should be included on the statement itself or on supplements to the statement to allow you to determine the specific areas where income is being earned and where money is being spent. In the example used in this book, the income statement is condensed so that it doesn't complicate the presentation. This condensation accurately reflects the vast majority of statements since it includes all of the major income and expense categories. In actual income statements, broad categories are broken down into smaller, more detailed subdivisions. For instance, the broad category of sales *might be divided into market segments such as wholesale, retail, direct mail, and international. The manager could then examine the results of each market rather than use a potentially misleading overall total that could mask serious problems in one or more markets. In Chapter 6 explanations and ideas for setting up a detailed income statement for your business are discussed.*

First, let's get your computer ready to enter the example. Follow these six steps, and you'll be ready to start building the sample income statement. Be sure to follow the steps and instructions carefully, since skipping a step could cause problems later. (*Note:* If you are using the publisher's data disk described on page 170, initialize only one blank diskette for a backup copy in Step 1, then follow Steps 2–6).

Materials You Need:

1. VisiCalc Program diskette
2. 1 or 2 blank diskettes (not used until you save data in Step Six under Entering the Example)
3. Adhesive disk labels
4. DOS System Master diskette for Apple II, II Plus, or Apple III Utilities Diskette (not used until you format or copy a diskette)



Reminder: If you stop work and turn the computer off, all data will be erased from the computer's memory. Your worksheet will be lost, unless you have saved the data on a diskette. Since saving your work is not described or recommended until you have partially entered the example on the computer (Step Four under Entering the Example on page 32), leave your computer on as you proceed through the steps in the Getting Ready and Entering the Example sections in this and subsequent chapters.

Notation used in this book

Before you start the steps, take a moment to review the notation system used throughout this book. To simplify instructions describing keystrokes used with the Apple computer and the VisiCalc program, we use the following symbols.

Entry spaces, or cells, are indicated by column letters and row numbers. A cell is the space where a column and row intersect. For example, A23 is the entry space at the intersection of column A and row 23.

All items appearing in boldface, such as **>A23** or **NAME**, are to be entered by typing each character exactly as it appears, including spaces and punctuation. Exact typing isn't critical when you enter labels but it is critical when you enter data and formulas.

All items appearing in light typeface and capitalized SUCH AS THIS are instructions you will see on the VisiCalc prompt and edit lines. Use these prompts as a guide to your next step.

(S) is the symbol for the space bar. These (S) spaces are indicated only when they wouldn't otherwise be obvious. For instance, (S)s are indicated when the quotation (") key is to followed by a space (or spaces) to shift the first character entered in a label one or more spaces to the right. Thus the instruction **"(S)(S)(S)(S)%** tells you to press the shift and quotation keys to indicate that a label is to be typed, and then type four spaces and the percent sign.

[R] is the symbol for the return key on the Apple. It is used for a variety of functions, including the replication of data. The : (colon) key can be used whenever the [R] key is indicated.

[→] indicates the arrow key. It is used to move the cursor. The Apple III has four arrow keys. The Apple II Plus has only two that are used in conjunction with the space bar to change direction from horizontal to vertical and vice versa.

> indicates the GO TO command used to move the cursor to a specific cell. When you depress the shift key and the key with the period and > symbol, the prompt line will read GO TO: COORDINATE. Then you type a cell coordinate, such as A1, followed by [R]. The cursor will immediately go to the cell specified, that is, A1. You can also move the cursor to the same position by using the arrow keys.

Remember that column identification letters are different (except for column A) for the VisiCalc and VisiCalc Advanced Version programs, since the Advanced Version has the variable column width feature. For example, in D(B)32, **D** indicates the column for VisiCalc users and **(B)** indicates the column for VisiCalc Advanced Version users who have widened column A so labels can be entered on each row without having to move the cursor. 32 is the row number.

As a check that you understand the notation system, see if you can translate the following type instructions:

>**E**(C)**5** and type **"(S)(S)(S)(S)(S)%** [R]

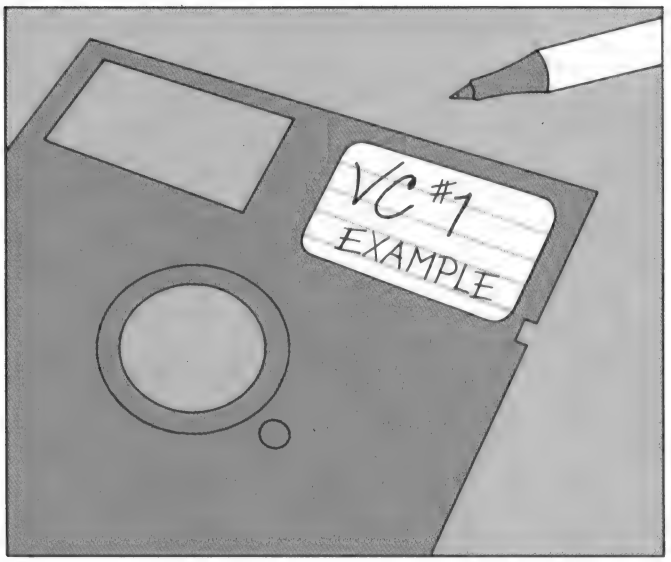
Translated, the instructions read: Go to cell E (or C for Advanced Version) 5 (the intersection of column E(C) and row 5) and type a quotation mark, 5 space bars, the percentage key, and then press the return key.

[AV] is the symbol used to highlight a special VisiCalc Advanced Version feature. Unless this symbol is used, the instructions given should be followed by both VisiCalc and VisiCalc Advanced Version users. Features indicated with this symbol are available only to Advanced Version users.

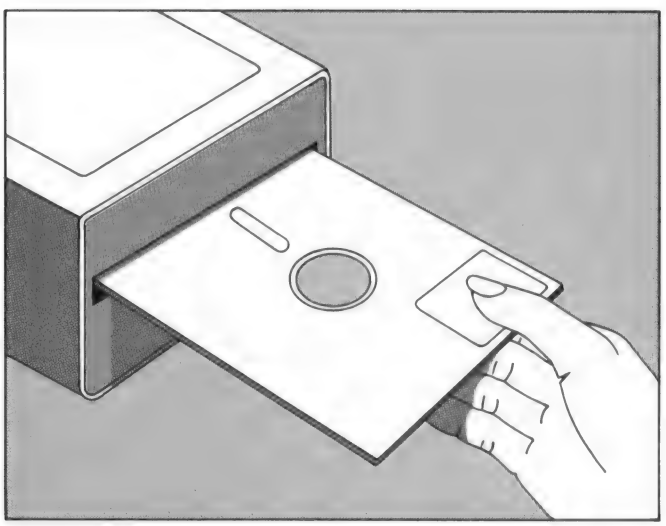
STEP 1 **Label and initialize two blank diskettes.** This is a quick but necessary step. Labeling helps you keep track of your diskettes, and initializing is required before you can store information on the diskette.

Begin by labeling the diskettes. Write an identifying code on an adhesive label; then peel the label off the backing and attach it to the top side of the diskette. We suggest that you code the diskettes using the software package and a number such as VC #1, VC #2, and so forth, for the VisiCalc diskettes. You could also use a more descriptive title, such as Example.1.VC (See page 33.)

The actual procedure for initializing the diskettes varies according to which computer and which VisiCalc version you use. (The procedure is called *formatting* with the Apple III.) If you are unfamiliar with the procedure for your computer and VisiCalc version, check your user's guide for specific instructions.



STEP 2 **Load the VisiCalc program** into the computer. The Program diskette (and, in the case of the Advanced Version, the Loader diskette) should be inserted into or removed from the disk drive only when the drive isn't working (when it isn't humming and the helpful red light is off). To load the VisiCalc or VisiCalc Advanced Version program into the computer's memory, start with the Apple turned off and follow these steps:

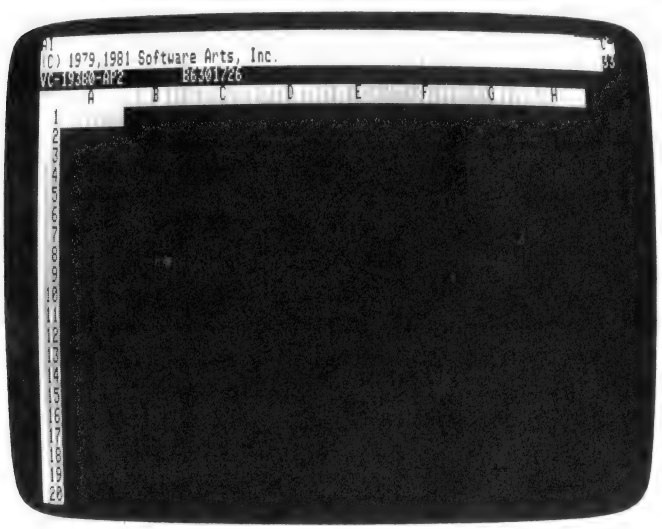


For the VisiCalc program:

1 Touching only the protective cover, hold the VisiCalc Program diskette with its label-side up facing you (if the diskette is in your right hand and your thumb is on the label, you are holding it correctly). Point the end of the diskette with the oblong opening toward disk drive #1, and insert the diskette into the drive door (see illustration). Gently push the diskette forward until you feel resistance. (Never push hard because the diskette will buckle if it gets caught on an obstruction.) Carefully jiggle the diskette to make sure it is fully inserted.

2 Gently close the drive door. As you slowly lower the door, make sure that the two metal fingers just clear the front end of the diskette. If they hit the top of the diskette, it isn't inserted far enough into the drive.

3 Turn the computer on to start the disk drive. When the drive stops the program is loaded into memory, and the characteristic VisiCalc display — with column letters across the top and row numbers down the side — should appear on the screen. (See illustration opposite.) You should now remove the Program diskette and refile it, in its protective sleeve, in a safe place.



For the VisiCalc Advanced Version program:

1 The Advanced Version is loaded into the memory of the Apple III using two disks: the Loader and the Program diskettes. The VisiCalc Advanced Version Loader diskette must first be "configured" to work with peripheral devices such as drives and printers. Before loading this diskette, check the Apple III "Standard Device Drivers Manual" for instructions on how to use the System Configuration Program (SCP).

2 Insert the configured VisiCalc Loader diskette into disk drive #1 and close the door. Turn the computer on, and the drive will begin to spin. When the drive stops, you will see a VisiCalc copyright notice, and then the prompt line will read PROGRAM FILE MISSING.

3 Remove the Loader diskette and insert the VisiCalc Program diskette into disk drive #1, then type (R). The Program diskette remains in the disk drive while you are using the program. Replace the Loader diskette in its protective sleeve, and store it in a safe place.

STEP 3 **Clear the screen.** Data, labels, formulas, or formats could be on the VisiCalc worksheet and not appear on the screen display. To be sure the computer's memory and the spreadsheet are clear of data before you begin work, always clear the screen.

To enter
a command to clear the screen

Type /C
The prompt line will read CLEAR: TYPE Y TO CONFIRM
Type **Y**

[AV] **To enter**
a command to clear the screen

Type /C
The prompt line will read Clear: A or S
Type **A**
The prompt line will read Clear: Type Y to Confirm
Type **Y**

Result If the screen was already clear, you won't see any change. Whenever you start a new worksheet, however, it is wise to use this command to be sure the screen is clear of all previously entered data.

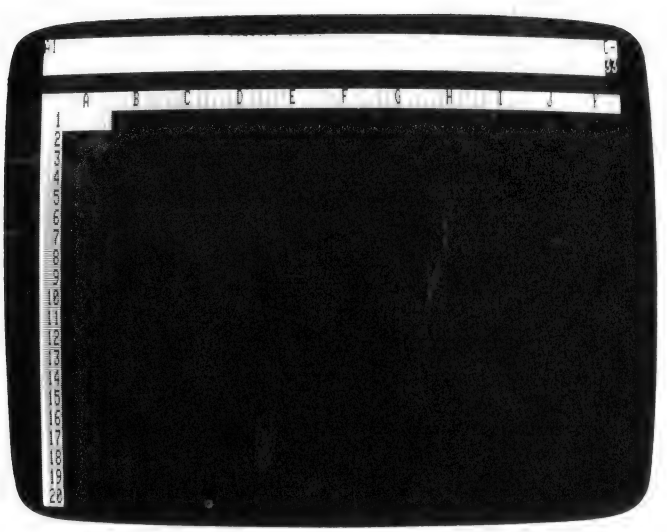
STEP 4 **Set column widths.** Column widths on the worksheet must be wide enough to hold the largest numbers you'll be entering in the example. The example requires a column width of 7 characters for the various numbers and formula values. If you are using the VisiCalc regular version, you'll set all columns to that width; but with the Advanced Version, you can set variable column widths by using a special command. That command makes the entering of labels easier and improves the overall appearance of the worksheet. For instance, label columns can be set wide, percent columns narrow, and dollar columns as wide as necessary. Therefore, we suggest (and assume) use of the variable column width with the Advanced Version for column A only.

To enter
a command to set column width(s)

Type /GC7 (R) (The position of the cursor is unimportant.)

[AV] **To enter**
a variable column width for easier entry of labels

Type >A1 and type **/GCC21** (R)



Result With the VisiCalc program and the Apple II or II Plus, you should see five columns, A-E, displayed on the screen. With the VisiCalc program and the Apple III, you should see eleven columns, A-K, as shown above. The VisiCalc Advanced Version 80-column display should show nine columns A-I, with column A 21 characters wide and all other columns 7 characters wide.

VISICALC TIPS Getting around the spreadsheet

The simplest way to move short distances on the electronic spreadsheet is to move the cursor with the arrow (→) key. On the Apple II and II Plus there are only two arrow keys, but they can move the cursor in four directions when used in conjunction with the space bar. On the VisiCalc display, an indicator in the upper right corner shows whether the arrow keys are set to move the cursor horizontally along a row or vertically up and down a column. To shift the indicator and the direction of movement, use the space bar.

A faster way to move around the spreadsheet, especially when the distances involved are large, is to use the GO TO command; just type >, then the coordinates of the cell you want to go to, followed by (R), or >**A1**(R), for example. If you don't know the exact coordinates of the cell you want to go, enter a rough approximation of the coordinates and make your final moves with the arrow keys. You'll still save time.

VISICALC TIPS Getting around with the Advanced Version

In addition to the arrow keys or GO TO command, the Advanced Version has two other entry features, which can dramatically speed template building or data entry into a completed template.

- **Keystroke memory**, like a function key, can be used to substitute a single character for a long string of characters. When the /**K**= command is used, up to 125 separate keystrokes can be saved in memory and assigned a single keystroke name. Type Control **K**, then the keystroke and the entire sequence of up to 125 keystrokes will be performed. Whenever you encounter a situation where the same series of keystrokes is used repetitively, this feature can save a lot of time. Typical applications might include the dating of cash flow statements or entering ruled lines on financial worksheets.

- **The tab command, /AT**, can be used to specify a sequence of cell coordinates. It operates in a way similar to the tab set key on a typewriter. You type /**AT** followed by the desired cell coordinates, then type the **TAB** or the Control **B** key, and the cursor will automatically move to the next position. This command can be very useful when you enter data into templates where the same data-entry positions are used repeatedly.

VISICALC TIPS Variable column widths

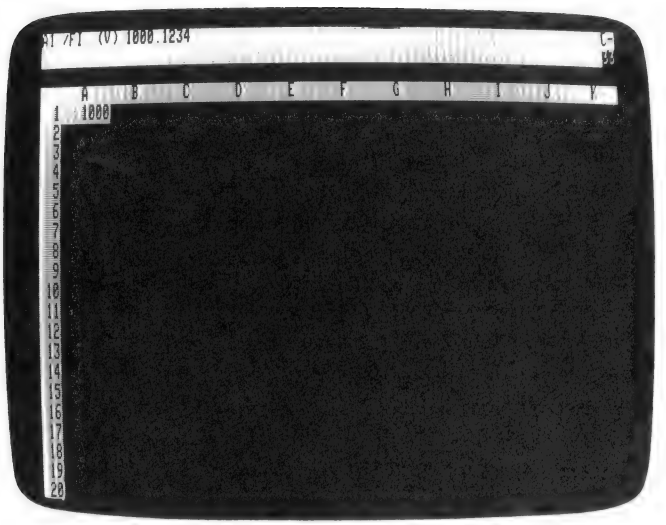
Using the variable column width feature of the Advanced Version will give you greater flexibility. Position the cursor in a column, and type /**GCC** followed by the number of characters wanted in that column, then (R). You can format a worksheet, column by column, setting label rows wide, percent columns narrow, and data columns to any width required. This format speeds the entry of labels and allows you to maximize the number of columns you can get on your monitor or printer. No extra characters are wasted, as they are with the regular version, because every column is set to the maximum width needed for that column.

In this book, our notation assumes Advanced Version users will use this feature to set the first column wide enough to accommodate the longest label (so there is no need to move the cursor when entering). All VisiCalc columns are indicated by letters (rows are indicated by numbers). Using the Advanced Version, you'll set the first column to the equivalent width of three regular VisiCalc columns, then all subsequent column references will change. What would be the fourth column in the VisiCalc sequence A-B-C-D is now the second column in the Advanced Version sequence A-A-A-B. In the typing instructions used in this book, the regular VisiCalc column label is given first, in a bold typeface. The Advanced Version column letter follows in parentheses and a regular typeface; for example, **Type** > **C** (A). The following chart lists the column notations.

VisiCalc Column Letter	VisiCalc Advanced Version Column Letter	Column Notation Used in Book
A	A	**A**
B	A	**B**(A)
C	A	**C**(A)
D	B	**D**(B)
E	C	**E**(C)
F	D	**F**(D)
G	E	**G**(E)
H	F	**H**(F)
I	G	**I**(G)
J	H	**J**(H)
K	I	**K**(I)

STEP 5 **Simplify the screen display.** The VisiCalc program provides a number of formats to display data on the screen and in printouts. One command drops from the display all numbers to the right of the decimal point. We will use this command to show dollar figures rounded off to the nearest dollar.

The VisiCalc Advanced Version program has several commands that can format the screen display and printouts. Since these can be entered after the example has been completed, we will not enter most of them with each individual step. They will be described at the end of each section, just before the completed example is saved for the last time.



To enter

a command to simplify the screen display

Type /GFI

Result No change is apparent on the screen. To check that the command has been entered, type a number such as 1000.1234 (R) into cell A1. The complete number, 1000.1234, should then appear on the cell contents line at the top of the worksheet, and the rounded-off number, 1000, should appear in the entry space A1. To remove the entry you just made in cell A1, type **/B** (R).

STEP 6 **Enter a command to speed up data entry.** Normally, the VisiCalc program automatically recalculates the entire worksheet whenever an entry is made. As worksheets increase in size, this recalculation can take a few seconds, and will slow down the entering of data. To speed up data entry, you can change the recalculation feature from automatic to manual. On manual, it recalculates only when you press the **SHIFT** and **!** keys simultaneously.

To enter

a command to change recalculation from automatic to manual

Type /GR

Prompt line will read RECALC: A M

Type **M**

Result Although no change appears on the screen, the recalculation feature should now work only at your command. This means that you can enter data more quickly as you build the example on the computer. To return the program at any time to automatic recalculation, type **/GRA.** But we suggest that you leave recalculation on manual while you build the example.

VISICALC TIPS Speeding entries by avoiding continual recalculations

When you build a template, every time you enter a new formula or a new value the entire sheet will be automatically recalculated. The larger the model you are building, the longer this takes. Initially this isn't a problem, but when you find yourself waiting longer and longer for the sheet to recalculate before you can enter the next information, you will want a quicker way. All you have to do is type **/GRM** to switch the sheet to manual recalculation. Now when you want to recalculate, just type **!** (the shift and exclamation keys pressed together). Until you press these keys, the worksheet won't be recalculated; and the data you enter won't be used by formulas that reference the cell into which those data are placed. You can switch back to automatic recalculation by typing **/GRA.**

Entering the example

You are now ready to begin building the sample income statement on the computer. Before you actually begin putting information into the computer, take a few minutes to read below how the steps are organized and described in the instructions. The same organization is used in other "Entering the Example" sections in the later chapters.

Each step has a number and title, such as "Step One. Enter headings and labels," or "Step Four. Save your work." Under each step, you'll be entering data or using computer procedures to transform or save data as you build the sample statement. Follow the steps in sequence, unless you are using the data diskette from the publisher (see page 170). In that case, see the special instructions that come with the diskette.

Each step is broken down into smaller units, or substeps. For most of the steps, the smaller units are row-by-row instructions that follow this outline:

Row number: For example, "Rows 1–3."

Row title: For example, "Heading for the income statement."

Row description: Explanation of label or term to be entered. All business terms used, such as *net income*, are explained.

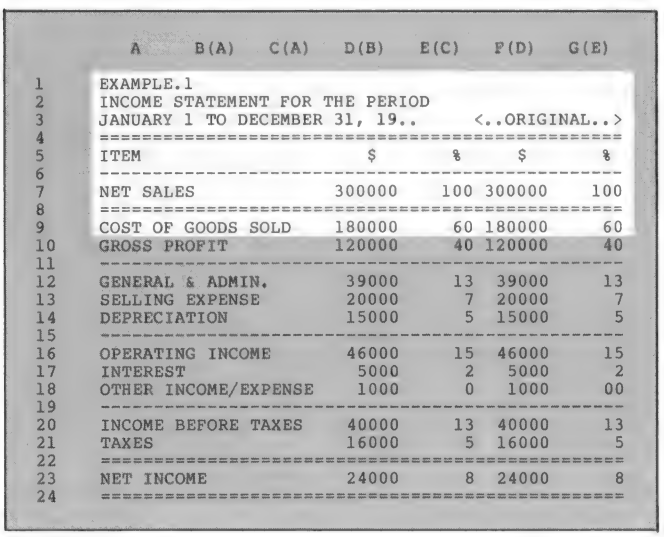
To enter: Tells you what you will be entering on the computer. You could be entering labels, values, formulas, or special commands to the computer, such as replication, saving files, loading files, etc. Most of the data you'll be entering will be in the form of labels (such as *net income*), values (numeric entries such as 5, 12, or .09), or formulas. Formulas are used to manipulate the data contents of various entry spaces. A formula could be a simple one, such as 2 x 10 (which uses the VisiCalc program as a calculator), or more powerful, such as 2 x D2, which would make the values in the entry space containing the formula twice as large as the value in D2.

Type: Tells you what to type on the computer keyboard. For example, you might see >**D**(B)**5** and type **2000** (R), which reads: Go to cell D5 (B5 for users of the Advanced Version) and type 2000 and then the return key.

When *type* instructions are different for the VisiCalc and VisiCalc Advanced Version programs, the Advanced Version instructions are given separately and identified by the symbol [AV]. With the Advanced Version, type the regular instructions first and *then* the Advanced unless instructed otherwise. The commands available to Advanced Version users that are most useful for the topics covered in this book are formatting and protecting the worksheet. Since these can be used after the labels, data, and formulas have been entered, they will not be entered until just before the completed example is saved. Remember that column widths are different if you use the variable column width feature with the Advanced Version, so those columns are listed in parentheses after the column for the regular version.

Result: This describes what should happen if you have entered the data correctly. Occasionally, photos of the screen display appear to illustrate the result. Except in the earliest sections, results are not given for entering labels or values into entry spaces on a row, since the expected result is so obvious. You should, however, always check the Results section after entering a formula.

Illustrations, such as the one below, show what data you'll be entering as you follow the instructions beginning on page 24. Note that the illustration has shaded areas. The *unshaded* area shows what you will be entering. For example, this illustration tells you that you'd be entering all data in the white space from EXAMPLE.1 down to row 9, COST OF GOODS SOLD.



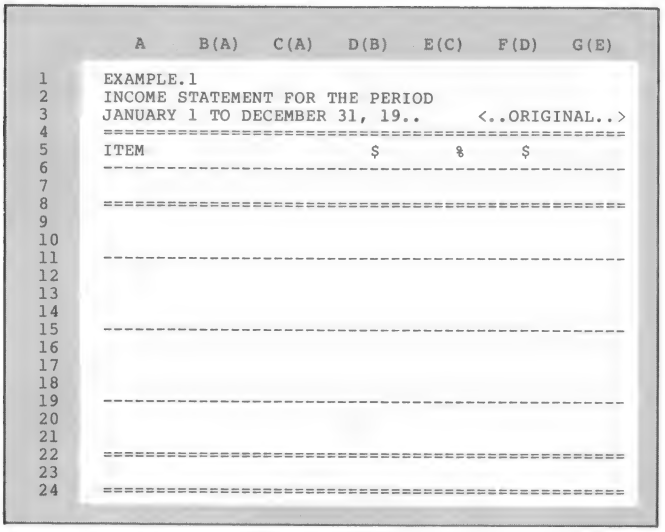
	A	B(A)	C(A)	D(B)	E(C)	F(D)	G(E)
1	EXAMPLE.1						
2	INCOME STATEMENT FOR THE PERIOD						
3	JANUARY 1 TO DECEMBER 31, 19..					<..ORIGINAL..>	
4	==========	==========	==========	==========	==========	==========	==========
5	ITEM			$	%	$	%
6	----------	----------	----------	----------	----------	----------	----------
7	NET SALES			300000	100	300000	100
8	==========	==========	==========	==========	==========	==========	==========
9	COST OF GOODS SOLD			180000	60	180000	60
10	GROSS PROFIT			120000	40	120000	40
11	----------	----------	----------	----------	----------	----------	----------
12	GENERAL & ADMIN.			39000	13	39000	13
13	SELLING EXPENSE			20000	7	20000	7
14	DEPRECIATION			15000	5	15000	5
15	----------	----------	----------	----------	----------	----------	----------
16	OPERATING INCOME			46000	15	46000	15
17	INTEREST			5000	2	5000	2
18	OTHER INCOME/EXPENSE			1000	0	1000	00
19	----------	----------	----------	----------	----------	----------	----------
20	INCOME BEFORE TAXES			40000	13	40000	13
21	TAXES			16000	5	16000	5
22	==========	==========	==========	==========	==========	==========	==========
23	NET INCOME			24000	8	24000	8
24	==========	==========	==========	==========	==========	==========	==========

VISICALC TIPS Entering data: The final (key) stroke

Although the return key, (R), is often the final keystroke when you enter information, it isn't the only one you can use. When making entries across a row or down a column, it's often faster to use the arrow (→) key, since it completes the entry just as the return key does, but it also moves the cursor to the next entry position, saving you a keystroke each time. When replicating, the : (colon) key can be used instead of the (R) key.

Step One

Enter headings, dates, and ruled lines for the example.



	A	B(A)	C(A)	D(B)	E(C)	F(D)	G(E)
1	EXAMPLE.1						
2	INCOME STATEMENT FOR THE PERIOD						
3	JANUARY 1 TO DECEMBER 31, 19..				<..ORIGINAL..>		
4	==========						
5	ITEM			$	%	$	
6	----------						
7							
8	==========						
9							
10							
11	----------						
12							
13							
14							
15	----------						
16							
17							
18							
19	----------						
20							
21							
22	==========						
23							
24	==========						

ROWS 1–3 **Headings and labels** will identify and date the income statement. The label EXAMPLE.1 will be used in the text and on the worksheet for the financial statements and ratios you will build on the computer in Chapters 3, 4, and 5. The name of the statement and period of time covered, given on the next two rows, indicate that the statement represents the activity of the firm for a one-year period, beginning on January 1 and ending on December 31.

Having a firm's fiscal year identically match the calendar year isn't always the best policy. Many firms prefer to have their fiscal year end during, or shortly after, their season of peak profitability (when most sales for the year are accounted for and inventories are at a low point), or at a time when accounting firms can handle their account more quickly and perhaps less expensively because it's a time that doesn't overlap with other firms' tax filings and year-end closings. (*Note*: Remember that spaces in headings are not indicated by an **(S)** symbol except for times when the spacing would not be obvious. At the end of type instructions for an entry, the right arrow key is indicated by the symbol (→). Press this arrow key the number of times indicated and you will move the cursor to the desired position for the next entry. The symbol (R) indicates the return key.)

To enter

labels to identify the example, the statement, the period covered, and the <ORIGINAL> columns
phantom instructions in cell A1 (These are instructions that can't be seen unless the cursor is positioned in the cell containing them. The instructions identify the lower right-hand corner of the example, so you don't have to search for the corner when you want to print out the worksheet. These instructions will be used later.)

Type >**A1** and type **EXAMPLE(S) PRINT TO G(E)96** (→)
>**B**(A)**1** and type **".1** (R)

>**A2** and type **INCOME** (→)
>**B**(A)**2** and type **STATEME** (→)
>**C**(A)**2** and type **NT FOR** (→)
>**D**(B)**2** and type **THE PER** (→)
>**E**(C)**2** and type **IOD** (R)

>**A3** and type **JANUARY** (→)
>**B**(A)**3** and type **"(S)1 TO D** (→)
>**C**(A)**3** and type **ECEMBER** (→)
>**D**(B)**3** and type **"(S)31,(S)19** (→)
>**E**(C)**3** and type **"..** (→)
>**F**(D)**3** and type **"<..ORIG** (→)
>**G**(E)**3** and type **INAL..>** (R)

VISICALC TIPS Entering labels

When you enter labels, you can frequently make good use of the **SHIFT** (") (shift and quotation keys depressed together) command. When you type this command first, before typing anything else, you can:

- Enter numbers, commas, periods, or other nonalphabetic characters such as −, +, =, %, $, #, ", *, and they will be treated as labels rather than as numbers or commands.

- Indent a label by using the space bar to shift the first letter, number, or character to the right. After you type the command, the first character to be entered will be shifted to the right one character space for each time the space bar is pressed. Throughout this book we use this command frequently, and when it is used to shift characters to the right each strike of the space bar key is indicated by **(S)**. For instance, indenting the first letter of a word, such as cost, four spaces would be shown as **"(S)(S)(S)(S)COST** (R).

VISICALC TIPS Phantom prompts

Phantom prompts are what we call the abbreviated instructions that appear on the entry contents line but that don't show on the normal screen display or on printouts of the worksheet (hence the name *phantom*). These prompts act as guides for entering information; throughout the book we have suggested times for you to enter phantom instructions on the computer.

To enter phantom prompts, you overtype the desired prompt into an entry space. It works like this: with VisiCalc (regular or Advanced Version), the number of letters you can type into an entry space is determined by the column width used. In our example, that column width is seven characters; in our template it is nine (column A for VisiCalc Advanced Version users is 21 and 27 characters respectively). When you type beyond that number of characters, the additional (or overtyped) characters will not appear on the worksheet but they will appear as phantom prompts. Type (R) and you'll see the overtyped characters appear on the entry contents line, as a phantom prompt. To see the prompt, you must position the cursor in the cell where you overtyped the characters. Phantom prompts are especially helpful for:

- **Printing out a worksheet**. Enter a phantom prompt to identify the lower right-hand corner of your worksheet.
- **Saving or loading with the DIF command**. You can enter a phantom prompt to specify the place to position the cursor when you save or load a DIF file. Or, you can specify the lower right-hand corner.

VISICALC TIPS Entering ruled lines

There are several ways to enter ruled lines on a worksheet. The three fastest and most frequently used methods (for either regular or Advanced Version) are as follows:

- One of the fastest ways is to type /--(R), or /-=(R). The first series of keystrokes will fill a cell with a single dashed line (-----), and the second a double dashed line (=====). You can replicate these lines across the worksheet as needed. Lines made in this way will not be saved and reloaded when the DIF command is used. When you reload the DIF file, the ruled lines will appear in each cell just as they were entered, i.e., /-- or /-= instead of as ruled lines.
- To enter ruled lines that will be saved and reloaded when the DIF command is used, enter the ruled line in the original cell by typing "---- (quotation marks followed by enough strokes to fill the cell) (R), or "= = = = = (R). This cell can then be replicated as needed, and will appear as a complete line when the saved DIF file is reloaded.
- The fastest way of all is to use function keys if your computer has them. With the Advanced Version, you can also use keystroke memory. Program one key to enter and replicate a double ruled line and another to do the same with a single ruled line. Refer to your owner's manual if you want to use these methods.

ROW 4

Double ruled lines are entered across the screen. These ruled lines separate major categories and make this, or any worksheet where they are used, easier to read. There are several ways to enter ruled lines with VisiCalc, and here we will use a method that allows them to be saved and reloaded with the DIF command (explained on page 34).

To enter

double ruled lines from column A to column G(E) on rows 4, 8, 22, and 24

Type **>A4** and type "= = = = = = = (R) (quotation mark followed by 7 equals signs), or, if using VisiCalc Advanced Version, type "= (R) (quotation mark followed by 21 equals signs).

To replicate

from one cell to a range

Type **>A4** and type **/R** (R) **B4.G**(E)**4** (R)

from one range to a number of ranges

Type **>A4** and type **/R.G**(E)**4** (R) **A8** (R)
>A4 and type **/R.G**(E)**4** (R) **A22** (R)
>A4 and type **/R.G**(E)**4** (R) **A24** (R)

Result The first step should have put a double ruled line in cell A4; the second step should have replicated it across the screen to column G(E). (On the Apple II, which has a 40-column screen, you will have to scroll the screen to the left to see the entire length of the line.) The last step should have put the double ruled line on rows 8, 22, and 24.

ROW 5 **Headings** for the income statement will identify the contents of each column. Also, a phantom instruction will be entered in two cells.

To enter

labels (ITEM, $, and %) that identify the columns on the income statement

phantom instructions to help with the DIF commands (to be used later)

Type >**A5** and type **ITEM** → → →
>**D**(B)**5** and type **"(S)(S)(S)(S)$(S)(S)DIF1 LOWER RIGHT E**(C)**24** →
>**E**(C)**5** and type **"(S)(S)(S)(S)(S)%** →
>**F**(D)**5** and type **"(S)(S)(S)(S)$(S)(S) LOAD DIF1 HERE** R

Result The screen display should show just the headings **ITEM, $,** and **%** on row 5. To check that the phantom instructions have been entered, put the cursor in cell D(B)5 or F(D)5. You should see the DIF instructions appear on the entry contents line at the top of the screen display.

ROW 6 **Single ruled lines** are entered across the screen to separate major categories on the income statement.

To enter

single ruled lines from column A to column E(C) on rows 6, 11, 15, and 19 (These lines will be entered using the same replication techniques as for double ruled lines.)

Type >**A6** and type **"- - - - - - -** R (quotation mark followed by 7 minus signs), or, if using the Advanced Version, type
"- -
R (quotation mark followed by 21 minus signs).

To replicate

from one cell to a range

Type >**A6** and type **/R** R **B6.G**(E)**6** R

from one range to a number of ranges

Type >**A6** and type **/R.G**(E)**6** R **A11** R
>**A6** and type **/R.G**(E)**6** R **A15** R
>**A6** and type **/R.G**(E)**6** R **A19** R

Result The first step should have put a single ruled line into cell A6; the second step should have replicated it out to column E(C). The last step should have put the single ruled line onto rows 11, 15, and 19.

Step Two

Enter line item labels, values, and formulas in columns A-D (the regular VisiCalc program) or in columns A-B (Advanced Version).

	A	B(A)	C(A)	D(B)	E(C)	F(D)	G(E)
1	EXAMPLE.1						
2	INCOME STATEMENT FOR THE PERIOD						
3	JANUARY 1 TO DECEMBER 31, 19..				<..ORIGINAL..>		
4	==========	==========	==========	==========	==========	==========	==========
5	ITEM			$	%	$	
6	----------	----------	----------	----------	----------	----------	----------
7	NET SALES			300000			
8	==========	==========	==========	==========	==========	==========	==========
9	COST OF GOODS SOLD			180000			
10	GROSS PROFIT			120000			
11	----------	----------	----------	----------	----------	----------	----------
12	GENERAL & ADMIN.			39000			
13	SELLING EXPENSE			20000			
14	DEPRECIATION			15000			
15	----------	----------	----------	----------	----------	----------	----------
16	OPERATING INCOME			46000			
17	INTEREST			5000			
18	OTHER INCOME/EXPENSE			1000			
19	----------	----------	----------	----------	----------	----------	----------
20	INCOME BEFORE TAXES			40000			
21	TAXES			16000			
22	==========	==========	==========	==========	==========	==========	==========
23	NET INCOME			24000			
24	==========	==========	==========	==========	==========	==========	==========

ROW 7 **Net sales** represents gross sales minus discounts and returns. These line items, described below, would appear on a detailed income statement but we have eliminated them from this condensed version to keep the presentation easy to follow.

Gross sales is total sales (unit or selling price times the number of units sold) made during the period covered by the statement. It is actual sales before any deductions. When the accrual system of accounting is used, all sales, both cash and credit, are entered at the time they occur. In a cash system, sales are entered only when paid for.

In a more detailed income statement, gross sales is broken down into separate categories that provide more detailed information. Sales breakdowns could be according to product or product line, type of market (such as wholesale, retail, direct mail, or international), or any other type of sales category the individual manager wants to track financially. This allows a manager to see, for example, that one product is selling well while another is dragging.

Discounts, returns, and allowances are the adjustments made to gross sales. They represent any deductions that account for the difference between gross sales and net sales. *Discounts* are the cash reductions in price offered by a company to customers who pay early or buy in large quantities. Discounts are often treated as an adjustment and separated from the selling price, because management wants to evaluate the effectiveness of offering such discounts. If, instead, discounts are included under the gross sales figure, it is difficult and costly to go back and get the information needed to determine the effect of discounts on sales. *Returns* are the goods or services that are either returned to the company (in the case of goods) or not accepted (in the case of services) because they don't meet the company's and/or the customer's standards. Defective merchandise is an example.

To enter

a label to identify net sales
a value of $300,000

Type **>A7** and type **NET SAL** (→)
>B(A)**7** and type **ES** (→)(→)
>D(B)**7** and type **300000** (R)

ROW 9 **Cost of goods sold** (also known as cost of goods, cost of sales, cost of goods manufactured) is the total cost paid for the products sold during the accounting period, plus freight-in costs. Freight-out is usually shown as a separate expense under another section of the income statement.

Most small retail and wholesale businesses compute cost of goods sold by adding the value of the goods purchased during the accounting period to the value of the beginning inventory, and then subtracting from that figure the value of the inventory on hand at the end of the accounting period.

For manufacturers, cost of goods sold includes, in addition to raw materials, the direct cost of manufacturing labor (including social security and unemployment taxes on factory employees), and overhead charges such as supervision, power, and supplies.

In this example you'll enter a formula that keeps the cost of goods a constant 60% of net sales. This 60% is only a sample percentage, and it may not reflect the cost of goods for your business.

To enter

a label to identify cost of goods
a formula in cell D(B)9 that will keep the cost of goods exactly 60% of net sales even when net sales is changed

VISICALC TIPS Entering formulas that begin with letters

The VisiCalc program automatically interprets the first character you type at any entry position. If the first character is a letter, the VisiCalc program assumes the entry will be a label. When entering formulas, however, you must specify the entry position of the data to be used in the formula. Since each entry position begins with a letter, e.g., **D12**, the VisiCalc program will assume the entry is a label unless the + command is used before entering the coordinate of the entry position. Rather than type **D12**, for instance, type **+D12**.

The + isn't the only command that will tell VisiCalc a formula is coming. Other keys that can be used to indicate a formula include @, (, and other mathematical symbols.

Type **>A9** and type **COST OF** (→)
>B(A)**9** and type **"(S)GOODS** (→)
>C(A)**9** and type **SOLD** (→)
>D(B)**9** and type **.6*D**(B)**7** (R)

Result You should get a cost of goods figure of **180000** in cell D(B)9. Later in the book, when net sales is changed, the cost of goods will change automatically, staying a constant 60% of net sales. If you don't get this result, check to be sure you entered the formula correctly. If you continue to have difficulty, see "Troubleshooting Example.1" on page 162.

ROW 10 **Gross profit** is net sales minus cost of goods sold. It represents the profit of the business before other expenses are met. When gross profit is expressed as a percentage of net sales it is called gross margin (see page 39).

To enter

a label to identify gross profit
a formula to calculate gross profit (net sales minus cost of goods sold)

Type **>A10** and type **GROSS P** (→)
>B(A)**10** and type **ROFIT** (→)(→)
>D(B)**10** and type **+D**(B)**7-D**(B)**9** (R)

Result A gross profit figure of **120000** should appear in cell D(B)10. You have now put a formula into the computer that will calculate gross profit as net sales minus cost of goods sold. When either of those items

changes, the computer will make a corresponding change in the gross profit. Since cost of goods is programmed in this example to be 60% of net sales, the gross profit figure will *always* be 40% of sales (net sales of 100% minus cost of goods of 60% = gross profit of 40%), unless the formula is changed.

ROW 12 **General and administrative expenses** (G & A) include general salaries and wages, supplies, and other operating costs necessary to the overall running of the business. Examples are officers' salaries, office overhead, light, heat, communication expense, salaries of general office and clerical help, cost of legal and accounting services, "fringe" taxes payable on administrative personnel, various types of franchise and similar fees, and other expenses. In our example, all these general and administrative expenses add up to $39,000.

To enter

a label to identify general and administrative expenses
a value of $39,000

Type >**A12** and type **GENERAL** ↵
>**B**(A)**12** and type **"(S)& ADMI** ↵
>**C**(A)**12** and type **N.** ↵
>**D**(B)**12** and type **39000** R

ROW 13 **Selling expenses** are those expenses incurred directly or indirectly in making sales. These include such items as salaries of salespeople and sales executives, wages of other sales employees, commissions, travel expenses, entertainment expenses, and advertising. Freight-out is included if the selling firm pays freight or shipping expense. A share of the company's rent, heat, light, power, supplies, and other expenses may also be charged to selling expense, since they were used to support the company's sales activities. However, in many small businesses, these expenses are charged to general and administrative expense. In the example, selling expense is $20,000.

To enter

a label to identify selling expense
a value of $20,000

Type >**A13** and type **SELLING** ↵
>**B**(A)**13** and type **"(S)EXPENS** ↵
>**C**(A)**13** and type **E** ↵
>**D**(B)**13** and type **20000** R

ROW 14 **Depreciation** represents the estimated decline in the value of fixed assets during the period covered; depreciation expense charges part of the cost of large assets to the periods when they are used. Many manufacturing firms include depreciation as part of goods sold, instead of including it as an operating expense. This is particularly true when a large percentage of their depreciable assets are devoted to the actual manufacturing of products. There are a variety of ways to calculate depreciation. For assets acquired prior to the end of 1980, the most common depreciation methods are: straight line, double declining balance, and sum-of-the-year's digits (SYD). For assets purchased after 1980, the Accelerated Cost Recovery System (ACRS) is used (see TIPS on Depreciation). The amount of depreciation you will deduct in any period is determined by the method, the estimated salvage value of the asset, and the estimated life of the asset. An accountant can offer advice about the best method to use for a specific company, since that method depends on present tax laws and other factors.

To enter

a label to identify depreciation
a value of $15,000

Type >**A14** and type **DEPRECI** ↵
>**B**(A)**14** and type **ATION** ↵↵
>**D**(B)**14** and type **15000** R

ROW 16 **Operating income** is income that is produced by a company's normal operations. It does not include "other" income, such as royalties, interest earned, or extraordinary income (e.g., the sale of a subsidiary or other assets). Therefore, operating income is a good measure of the profitability of a company's normal business activities. When expressed as a percentage of net sales it is known as the *operating margin.*

To enter

a label to identify operating income
a formula that will calculate operating income (gross profit − (G&A + selling expense + depreciation))

Type >**A16** and type **OPERATI** ↵
>**B**(A)**16** and type **NG INCO** ↵
>**C**(A)**16** and type **ME** ↵
>**D**(B)**16** and type **+D**(B)**10-@SUM(D**(B)**15.D**(B)**11)** R

Result A label for operating income and the figure 46000 should appear on row 16.

BUSINESS TIPS Depreciation

The Economic Recovery Tax Act of 1981 replaced the prior concept of depreciation — based on the useful life of an asset — with a new system called the Accelerated Cost Recovery System (ACRS). Under ACRS, the entire cost of an asset is recovered over a predetermined period. The newly prescribed recovery periods are generally shorter than the useful life of the asset. By offering faster recovery of capital costs, ACRS provides greater incentives for increased capital investment.

ACRS applies to assets placed in service after 1980. Different rules apply to business assets placed in service prior to 1981. These are discussed in IRS Publication 534, "Depreciation."

Under ACRS, the cost of personal property can be recovered over a 3-, 5-, 10-, or 15-year recovery period. The recovery periods are based on the type of property. For example, autos and light-duty trucks are eligible for a 3-year write-off; however, most depreciable property (such as office furniture, equipment, and machinery) will qualify for a 5-year write-off. Depreciable real property can be written off over 15 years. Certain longer recovery periods are optional. Business owners may also use the straight-line method of depreciation over either the regular recovery period or the optional longer recovery periods.

Generally, to determine the ACRS write-off, the basis (usually the cost) of the property is multiplied by a percentage stated in the recovery tables. The percentage to be applied depends on the property's class and the number of years since the property was placed in service. The recovery percentages for property placed in service during 1981 through 1984 (with the exception of the 15-year property) are shown below:

Class of property and application percentage

Recovery year	3-year property	5-year property	10-year property
1	25%	15%	8%
2	38%	22%	14%
3	37%	21%	12%
4		21%	10%
5		21%	10%
6			10%
7			9%
8			9%
9			9%
10			9%

VISICALC TIPS Using the @SUM command

When using the **@SUM** command (or many other commands beginning with the prefix @) it is best if you establish the range of the formula between two ruled lines rather than two data entry points. This allows rows to be added or deleted, and as long as this is done between the ruled lines, the formula will continue to work. If this isn't done and the formula adds a column of figures, when you delete or add to the top or bottom figures in the range of the formula, the VisiCalc program will give an **ERROR** message.

ROW **17** **Interest expense** includes all interest paid by the company on loans used to finance the business during the period covered by the statement.

To enter

a label to identify interest
a value of $5,000

Type >**A17** and type **INTERES** →
>**B**(A)**17** and type **T** → →
>**D**(B)**17** and type **5000** R

ROW **18** **Other income and expense** includes income or expense from sources outside of the company's normal business activities. Sources of other income might include interest, dividends, sale of assets, rents, royalties, or capital gains. Other expenses might include losses on the sale of assets or other extraordinary expenses. Ordinarily, these figures would not be combined as they are in our simplified example, which shows expense of $1,000.

To enter

a label to identify other income and expense
a value of $1,000

Type >**A18** and type **OTHER I** →
>**B**(A)**18** and type **NCOME/E** →
>**C**(A)**18** and type **XPENSE** →
>**D**(B)**18** and type **1000** R

A comment on how we handled the Other Income/Expense line is in order. Because we combined these two items, you will want to know how it works so you can apply it to your business.

Our formula for calculating income before taxes (Row 20) subtracts the sum of interest (Row 17) and other income/expense (Row 18) from operating income (Row 16). If other income is greater than other expense you would normally add the other income to operating income and subtract the other expense from operating income. But for simplification our example subtracts the entry on the other income/expense line from operating income. So if other income exceeds other expense, the sum of these must be entered as a negative number for the formula to work.

ROW 20 **Income before taxes** shows what the firm's profit is after all expenses except taxes have been deducted from sales. This item is often called *earnings before taxes* or *profit before taxes*. When expressed as a percentage of sales, it is known as the *before-tax profit margin*, or the *before-tax earnings margin*.

To enter

a label to identify income before taxes
a formula to calculate income before taxes (operating income − interest + other income − other expense)

Type >**A20** and type **INCOME** ⏎
>**B**(A)**20** and type **BEFORE** ⏎
>**C**(A)**20** and type **TAXES** ⏎
>**D**(B)**20** and type **+D**(B)**16-D**(B)**17-D**(B)**18** ⏎R

Result You should see an income before taxes figure of 40000 in cell D(B)20.

ROW 21 **Taxes** include the federal, state, and local taxes paid by (or, in some cases, refunded to) the company. In this example, a representative tax rate of 40% of income before taxes is used. This number works well for demonstration purposes, but it may differ from your own firm's costs in this area.

To enter

a label to identify taxes
a formula that will automatically keep taxes at 40% of income before taxes

Type >**A21** and type **TAXES** ⏎⏎⏎
>**D**(B)**21** and type **.40*D**(B)**20** ⏎R

Result Taxes in cell D(B)21 should read 16000.

ROW 23 **Net income** (also known as *net profit*, *after-tax income*, *after-tax profit*, *net earnings*, *after-tax earnings*) is the money or profits left after all expenses have been paid. The net profit is available for distribution to shareholders or for retention within the business to help finance operations or expansion. Net income is called *profit margin*, *net margin*, or *after-tax margin* when it is presented as a percentage of net sales.

To enter

a label to identify net income
a formula that will automatically calculate net income (income before taxes − taxes)

Type >**A23** and type **NET INC** ⏎
>**B**(A)**23** and type **OME** ⏎⏎
>**D**(B)**23** and type **+D**(B)**20-D**(B)**21** ⏎R

Result The net income figure in cell D(B)23 should read 24000.

Step Three

Create a common-sized income statement. Formulas are entered in column E(C) so that all values in column D(B) are shown as percentages of net sales. Changes in any values in column D(B) will be reflected in changed percentages in column E(C).

	A	B(A)	C(A)	D(B)	E(C)	F(D)	G(E)
1	EXAMPLE.1						
2	INCOME STATEMENT FOR THE PERIOD						
3	JANUARY 1 TO DECEMBER 31, 19..				<..ORIGINAL..>		
4	==========						
5	ITEM			$	%	$	
6							
7	NET SALES			300000	100		
8	==========						
9	COST OF GOODS SOLD			180000	60		
10	GROSS PROFIT			120000	40		
11							
12	GENERAL & ADMIN.			39000	13		
13	SELLING EXPENSE			20000	7		
14	DEPRECIATION			15000	5		
15							
16	OPERATING INCOME			46000	15		
17	INTEREST			5000	2		
18	OTHER INCOME/EXPENSE			1000	0		
19							
20	INCOME BEFORE TAXES			40000	13		
21	TAXES			16000	5		
22	==========						
23	NET INCOME			24000	8		
24	==========						

The expression "We made a 7% profit last year" refers to the bottom-line profit on the income statement, expressed as a percentage of net sales. This reduction of an item on the income statement (or balance sheet) to a percentage serves a number of functions. The fact that dollar amounts are placed in this relationship allows results from different periods or even different firms to be compared and evaluated more easily. Because the relationships between numbers on the statement rather than the absolute size of the numbers are emphasized, a financial statement expressed in percentages is called a *common-sized* statement. The individual percentages are called *operating ratios*.

Operating ratios are valuable management tools. They help managers interpret a series of figures with continually changing absolute dollar values. For instance, look at these figures:

Year	1983	1984
Net sales	$1,500,000	$1,750,000
Cost of goods sold	750,000	910,000
Gross profit	750,000	840,000
Operating costs	150,000	210,000
Income before taxes	600,000	630,000
Taxes (40%)	240,000	252,000
Net income	360,000	378,000

As a manager, would you say business performance improved across the board during the year, or are there areas where costs are rising faster than sales increases warrant? It's hard to tell using just absolute figures. Now look at the same figures reduced to percentages of net sales:

Year	1983	1984
Net sales	100%	100%
Cost of goods sold	50%	52%
Gross profit	50%	48%
Operating costs	10%	12%
Income before taxes	40%	36%
Taxes (40%)	16%	14%
Net income (Net profit margin)	24%	22%

Now it's easy to see that 1984 was not as good a year as 1983. Although dollar profits rose from $360,000 to $378,000, the net profit margin (net income as a percentage of net sales) declined from 24% to 22%. Therefore, the manager should closely examine the expense items. The common-sized ratios indicate that these costs rose relative to net sales during 1984, and they caused the reduction in the net profit margin.

Operating ratios for an income statement are calculated by dividing all items on the statement by net sales. For example, this is how to calculate the operating ratio for the cost of goods sold for 1983:

$$\frac{\text{Cost of goods sold}}{\text{Net sales}} = \frac{\$750{,}000}{\$1{,}500{,}000} = .50 = 50\%$$

Operating ratios are helpful in evaluating your own business, and also are ideal for comparing your firm's performance to other firms in the same industry. Many organizations collect statistics from firms using these ratios, and make the results available to others. This use of operating ratios is discussed further in Chapter 7.

In this section we will show you how to calculate operating ratios quickly using the VisiCalc program, and thereby build a common-sized income statement. Then we'll move on to explore "What Ifs" to see how typical decisions you might make could hurt or improve your company's condition.

VISICALC TIPS Speeding up replication of formulas

When you replicate long columns or rows containing numerous formulas, the need to type **N** (for *no change*) or **R** (for *relative*) for each reference to other cells can become tedious. Sometimes the references are either all Rs or all Ns.In such situations you can dramatically speed up the replication process by using the REPEAT key. Type the appropriate key (either **N** or **R**), and hold it and the REPEAT key down simultaneously. You can watch the flashing formulas on the prompt line to get a rough idea of which formulas on the worksheet are being replicated. When the column replication is completed, the cell containing the cursor will begin to fill with Rs or Ns. At this point, release the N or R key and use the **ESC** (escape) key to back over and erase all of the Rs or Ns appearing in the cell containing the cursor. When the last is erased, the original cell contents will reappear in the cell occupied by the cursor and the replication is complete.

COLUMN E(C) **The formula to calculate operating ratios** must be entered and replicated. In this step you'll enter the formula to divide all items by net sales, starting with net sales divided by itself. The formula is then replicated down the rest of the example until net income is reached. The formula also multiplies the results of each division by 100 to remove the decimal point and make the percentage a whole number such as 50%.

The Advanced Version has a command that simultaneously multiplies the formula used to calculate percentages by 100 and adds a percent sign (%) as a label. If you use this feature, don't enter the first formula given below for E(C)7 since that formula is designed for VisiCalc users. Go directly to the "[AV] To enter" typing instructions.

To enter

a formula in cell E(C)7 that will divide net sales by itself and multiply the result by 100 so it is displayed as a whole number

Type >**E**(C)**7** and type **(D**(B)**7/D**(B)**7)*100** (R)

[AV] **To enter**

percent signs following percentages in all cells

Type >**C7** and type /**AV**% (R) (R) +**B7/B7** (R)

To replicate

from one cell to a number of ranges

Type >**E**(C)**7** and type /**R** (R) **E**(C)**9.E**(C)**10** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

Type >**E**(C)**7** and type /**R** (R) **E**(C)**12.E**(C)**14** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

Type >**E**(C)**7** and type /**R** (R) **E**(C)**16.E**(C)**18** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

Type >**E**(C)**7** and type /**R** (R) **E**(C)**20.E**(C)**21** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

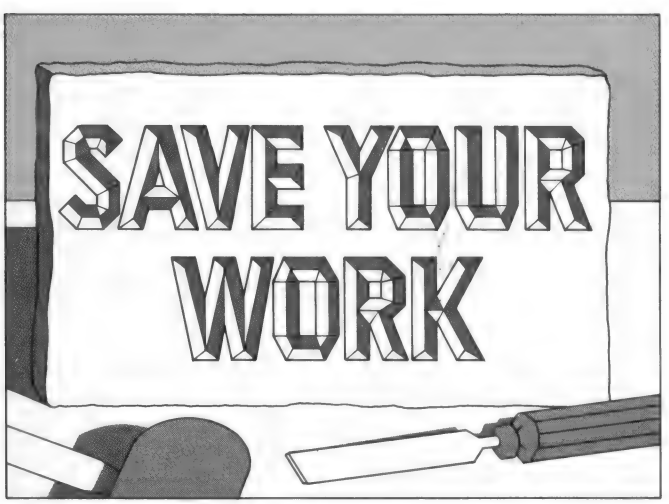
Type >**E**(C)**7** and type /**R** (R) **E**(C)**23** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

Result You have built a sample common-sized income statement on the computer. The percentages in column E(C) now show how much each line item is as a percentage of net sales. If any numbers in column D(B) are changed, all percentages will be automatically recalculated by the computer using the formula you have entered.

The percentages in column E(C) on your display should match those in the print-out on page 30. If they don't, check to see that you correctly entered and replicated the formula.

Step Four

Save your work. You will often want to save a VisiCalc worksheet even when it isn't complete (a worksheet is any combination of labels, data, or formulas entered into the VisiCalc program when working out a problem). This protects your work when you want to take a break and prevents its loss if a mistake is made or if something goes wrong. Saving a file is simple and doesn't affect either the data in the computer's memory or the display on the screen. After taking a few seconds to save the file, you can return to the problem exactly where you left it. Make sure you use the procedure for the VisiCalc version you are using.



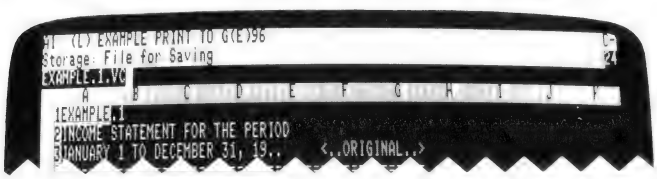
Step by step with the Apple II and the VisiCalc program:

1 Insert an initialized diskette into drive #1 and close the drive door.

2 Move the cursor to the upper left corner of the worksheet by typing >**A1** (R). When a file is reloaded from the diskette into memory, the screen display will come up exactly as it was when saved. Since file titles can be con-

A1 (L) EXAMPLE PRINT TO G(E)96
Storage: File for Saving
1EXAMPLE.1
2INCOME STATEMENT FOR THE PERIOD
3JANUARY 1 TO DECEMBER 31, 19..
<..ORIGINAL..>

A



B

veniently placed in the upper left-hand corner, it helps always to reload the files with the top left-hand corner visible on the screen.

3 To save the file onto the diskette, type **/SS**. The prompt line will read STORAGE: FILE FOR SAVING. (See A above.) Since this is the first time this file has been saved, it needs a file name. (See B above.)

Type **EXAMPLE.1.VC** (R)

Step by step with the Apple III with the VisiCalc or VisiCalc Advanced Version programs:

1 Insert an initialized diskette into either drive and close the drive door.

2 Move the cursor to the upper left corner of the worksheet by typing **>A1** (R). When a file is reloaded from the diskette into memory, the screen display will come up exactly as it was when saved. Since file titles can be conveniently placed in the upper left-hand corner, it helps to always reload the files with the top left-hand corner visible on the screen.

3 To assign a name and save the file onto the diskette, type **/S**. The prompt line will read STORAGE: L S D Q # C. Type **S**. The prompt line will read STORAGE: FILE FOR SAVING. Type **.D** (number of drive)/**EXAMPLE.1.VC** (R)

Result The disk drive will spin, the red light will come on, and the diskette will record the worksheet so that it can be reloaded when needed. The display on the screen is unchanged, as is the data in memory. You can choose to continue or to turn the computer off. Everything that was in memory is now safely stored on the diskette, from which it can easily be reloaded back into memory (see "Reloading your example" on page 48). You can now remove the data disk from drive #1 and store it until you want to save again. To be even safer, make a backup copy of the disk so that you have two of them. Store them separately so the same accident can't happen to both.

VISICALC TIPS Acceptable VisiCalc file names

The file names you can use to save files depend to some extent on the Apple computer you are using.

VisiCalc file names on the Apple II Plus and Apple IIe:

- Can be up to 30 characters long.
- Must start with a letter.
- Cannot include (,), (R), **(CTRL M)**; and should avoid **(ESC)** or the (→) key.

VisiCalc and VisiCalc Advanced Version file names on the Apple III:

- Can be up to 15 characters long.
- Must start with a letter.
- Can include only letters, numbers, and periods. They cannot contain spaces, returns, or any characters other than those specifically allowed.

If you try to save a file with an improper file name, you may receive an ERROR message and must try again.

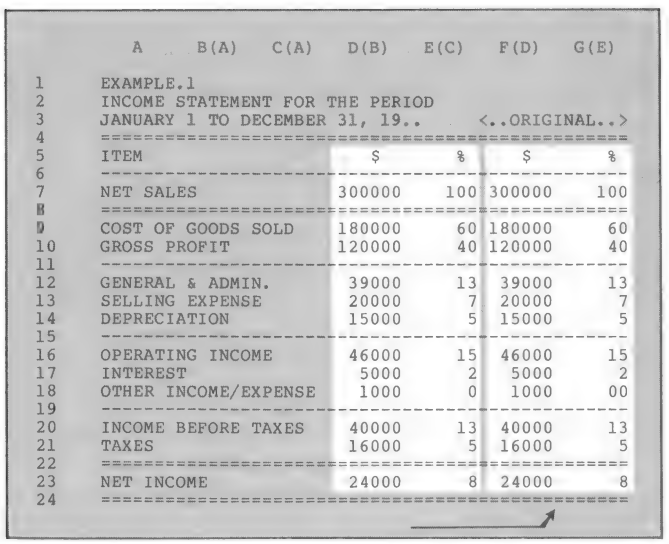
VISICALC TIPS Keeping files separated

With the VisiCalc or VisiCalc Advanced Version programs, you can save information in three ways: as text files, DIF files, or print files. Because different commands load and save each of these three types of files, it helps to code file names with the type of file.

- **.VC** used as a suffix after a file name indicates that the file is a regular VisiCalc text file saved using the **/SS** command, which can be reloaded using the **/SL** command.
- **.DIF** following a file name indicates that the file is in the disk interchange format used to move files from one file to another, or from one program to another. DIF files are saved using the **/S#S** command, and can be reloaded using the **/S#L** command.
- **.PF** as a suffix indicates that the file is a print file saved using the **/PF** command. Print files cannot be reloaded into the VisiCalc worksheet, but with the appropriate program these files can be transferred to a word processing program.

Step Five

Transfer data to the <ORIGINAL> columns. The <ORIGINAL> columns, F(D) and G(E), used for comparison purposes, are copied from column D(B) and E(C) using the DIF command.



	A	B(A)	C(A)	D(B)	E(C)	F(D)	G(E)
1	EXAMPLE.1						
2	INCOME STATEMENT FOR THE PERIOD						
3	JANUARY 1 TO DECEMBER 31, 19..					<..ORIGINAL..>	
4	==========	==========	==========	==========	==========	==========	==========
5	ITEM			$	%	$	%
6	----------	----------	----------	----------	----------	----------	----------
7	NET SALES			300000	100	300000	100
8	==========	==========	==========	==========	==========	==========	==========
9	COST OF GOODS SOLD			180000	60	180000	60
10	GROSS PROFIT			120000	40	120000	40
11	----------	----------	----------	----------	----------	----------	----------
12	GENERAL & ADMIN.			39000	13	39000	13
13	SELLING EXPENSE			20000	7	20000	7
14	DEPRECIATION			15000	5	15000	5
15	----------	----------	----------	----------	----------	----------	----------
16	OPERATING INCOME			46000	15	46000	15
17	INTEREST			5000	2	5000	2
18	OTHER INCOME/EXPENSE			1000	0	1000	00
19	----------	----------	----------	----------	----------	----------	----------
20	INCOME BEFORE TAXES			40000	13	40000	13
21	TAXES			16000	5	16000	5
22	==========	==========	==========	==========	==========	==========	==========
23	NET INCOME			24000	8	24000	8
24	==========	==========	==========	==========	==========	==========	==========

In the next chapter section, you'll explore possible changes in the income statement using "What If" questions. But first you need to transfer the information you have developed, so that you can compare the new figures entered during the "What Ifs" with the old, original figures. You'll do this by putting the values currently in columns D(B) and E(C) into the <ORIGINAL> columns F(D) and G(E). This transfer procedure is easily done on the computer by using a special feature, called a *disk interchange format* (DIF). This command is used because it transfers only the calculated values and not the formulas themselves. This means the <ORIGINAL> columns are nonworking; they only store the original calculated values. If you were to change one of the values in the original column (which you shouldn't do), the others won't change.

COLUMNS D(B) and E(C) **Use DIF (disk interchange format) to save the file.** This allows you to save a row, a column, a rectangle of labels, ruled lines (provided they were entered as described on pages 25–26), values, or values calculated by formulas. DIF will not save or transfer formulas, only the calculated value contained in the cell at the time the DIF is used. In this case, you will save and transfer the $ and % columns — D(B) and E(C) — of the income statement to columns F(D) and G(E). If you are using an Apple III or have adapted your Apple II Plus to an 80-column screen, you will always be able to see these columns, labeled <ORIGINAL>, and to compare them to the changes in column D(B). If you are using an Apple II Plus with a 40-column display they can be seen by scrolling the display.

Completion of this process will also be a great help when you restore the working column to its original state after finishing one "What If" and before beginning the next.

To save

using the DIF command

Type >**D**(B)**5** and type **/S#**
The prompt line will read DATA: SAVE LOAD
Type **S** (for save)
The prompt line will now read DATA SAVE: FILE FOR SAVING
Type **DIF1** (R)
The prompt line will now read DATA SAVE: LOWER RIGHT
When the cursor is in cell D(B)5, the cell contents line reveals the hidden instructions entered on page 26 and reads DIF1 LOWER RIGHT E(C)24

Type **E**(C)**24** (R)
The prompt line will now read DATA SAVE: R,C OR RETURN
Type (R)

Result The rectangular area of the income statement consisting of columns D(B) and E(C) from row 5 to row 24 is now saved on the disk under the file name DIF1. If you don't get the result, clear the screen (assuming you saved it as suggested in the last step). Reload the file and try again.

VISICALC TIPS Replicating a block

When Example.1 is entered in Chapters 3 and 4, the DIF command is used to transfer a block of data in two columns to the two adjacent columns. With the Advanced Version you can replicate the entire block in one step. To do this, type /**R** followed by the source range (the range you are replicating from), in this case the cell coordinates of the upper left-hand corner and the lower right-hand corner of the block to be replicated. The target range (the range you are replicating to) is then entered with only the upper left-hand cell coordinate specified.

VISICALC TIPS Displaying dollar values

The VisiCalc Advanced Version program has attribute commands that improve the way dollar values are displayed. You can choose to use any or all of the following attributes:

- All values over 1000 can be displayed with a comma at the thousand position, million position, etc. For example, with this command, a value of 100000 is displayed as 100,000. To activate the command, type /**AV,**
- Dollar signs ($) can be added to numbers so they are immediately recognizable as dollar figures. The value of 100000 is then displayed as $100000. Type /**AV$**
- Parentheses can be automatically displayed to highlight negative values. This is especially valuable when used with accounting or financial applications. A value of −1000, for instance, is displayed as (1000). Type /**AV(**
- The number of decimal places can be precisely controlled. A value of 100 can be displayed as 100.0 (/**AV1F**), 100.00 (/**AV2F**), 100.000 (/**AV3F**) and so on. Type /AV followed by the desired number of decimal places, then F.

You can use any combination of these commands to display numbers such as −100000 as (100000), ($100000), (100,000.00), or many other ways. Try several possibilities and pick the format you like best.

These attributes can be used locally or globally, and can be added before data are being entered, while data are being entered, or later. The format can be replicated to other cells, columns, rows, or blocks, along with other cell contents or by itself.

VISICALC TIPS Calculating and displaying percentages

In most financial statements, percentages are shown rounded off, without decimal places. To obtain this result with the VisiCalc program, you first enter the formula — for instance, cost of goods sold divided by net sales — and then multiply by 100: (cost of goods/net sales)*100. Multiplying by 100 eliminates the decimal, so percentages appear on the screen and in printouts as whole numbers (10, 20, 30, etc.) rather than as decimals (.10, .20, .30).

If you are using the Advanced Version, you can use the /**AV%** command instead of multiplying by 100. The /**AV%** command simultaneously multiplies the calculated result of the formula you enter by 100 and displays the answer followed by a % sign: 10%, 20%, 30%.

The display of calculated percentages in the cells can also be changed as needed to obtain the degree of precision desired. /**FI** will display the calculated percentage as a rounded-off whole number (for example, 20), /**F$** will display it out to two decimal places (20.34), and /**FG** will display it out to the maximum number of decimals allowed by the column width setting (20.3411234). To see even more decimals when using the /**FG** format, you can temporarily change the column width by using the /**GC** command. You can enter any of these formats before or after entering formulas.

COLUMNS F(D) and G(E) **Use the DIF (disk interchange format) command to load the file.** The columns saved using the DIF command in the previous step can now be loaded into the <ORIGINAL> columns. Remember that the DIF command only transfers calculated values; formulas are left behind. You'll be loading the values calculated by the formulas originally entered in columns D(B) and E(C). Once these values are in the <ORIGINAL> columns, they can be used to gauge the effect of value changes in columns D(B) and E(C).

To load a DIF file

Type >**F**(D)**5** and type /**S#**
The prompt line will read DATA: SAVE LOAD
Type **L**
The prompt line will read DATA LOAD: FILE TO LOAD
Scroll with the arrow → key until DIF1 appears on the edit line.
Type R
The prompt line will read DATA LOAD: R, C OR RETURN
Type R

Result The disk drive spins, and the rectangular area of the income statement between columns D(B) and E(C) and rows 5 to 24 is loaded into the area between columns F(D) and G(E) (the <ORIGINAL> column) on the same rows. Remember that these <ORIGINAL> columns, unlike columns D(B) and E(C), don't have formulas in them, only numbers. The numbers, however, are all you need, since the purpose of the <ORIGINAL> columns is to store the original numbers for later comparison.

Step Six

Formatting, protecting, and saving.

Formatting the income statement If you are using the VisiCalc Advanced Version program you can format a worksheet after it has been finished. This allows you to experiment with a number of different formats without having to replicate formulas and data as you would with the regular version. In this example we are going to format all numbers so they have commas separating thousands and negative numbers appear in parentheses.

AV To format
the income statement

Type >**B7** and type /**AV,(** R R

To replicate
from one cell to a range

Type >**B7** and type /**R**
The prompt line will read
Replicate: (, Source Range or RETURN
Type **(**
The prompt line will read Replicate:Limit: ACNR)
Type **A)** R **B8.B23** R

from one range to another range

Type >**B7** and type /**R**
The prompt line will read
Replicate: (, Source Range or RETURN
Type **(**
The prompt line will read Replicate:Limit: ACNR)
Type **A).B23** R **D7** R

Result The two dollar columns of the income statement, B and D, will now be formatted. All dollar values should appear with commas separating thousands and negative numbers should be in parentheses.

Protecting the income statement If you are using VisiCalc Advanced Version you can protect all of the cells in the income statement so they aren't inadvertently overwritten or erased. Since no data will be entered into the label or <ORIGINAL> columns of the income statement, it is suggested that you protect them.

VISICALC TIPS Formatting the display and printouts

The best time to format a worksheet, so it will be easy to read and will provide the precision you need, is after it has been completed and data entered. At this point, you can try different options and choose the best. This is easy to do with general formats, but local formats can be a problem. Local formats can't be replicated into cells, rows, or columns without affecting cell contents. Formulas and data are erased unless they are replicated along with the format. Formats can be changed, but large worksheets can often require a great deal of formatting and replicating.

The Advanced Version solves this problem. When you use the *replicate* command you can choose from several options.

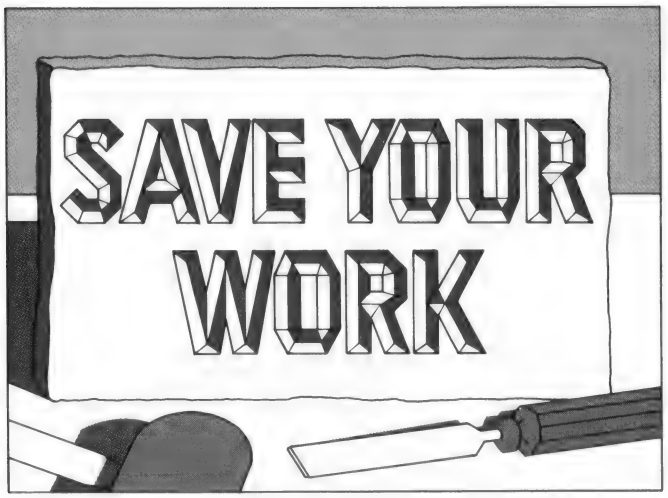
You can replicate just the attributes (a number of decimal places, numbers displayed with commas and dollar signs, negative values displayed in parentheses) by replicating with the /**R(A)** command. (Look up this command in your owner's manual if you need instruction on how to use it.) Or you can choose to replicate just the contents of a cell and not the attributes. The command /**R(C)** replicates just cell contents (formulas, data, labels).

AV To protect
the income statement

Type >**A1** and type /**AMP** R R
Type /**R**
The prompt line will read Replicate: (, Source Range or RETURN
Type **(**
The prompt line will read Replicate:Limit: ACNR)
Type **A)** R **A2.A24** R

>**A1** and type /**R**
The prompt line will read Replicate: (, Source Range or RETURN
Type **(**
The prompt line will read Replicate:Limit: ACNR)
Type **A).A24** R **C24.E24** R

Result All columns of the income statement other than column B, where changes will be entered, are now protected. To check that they are, go to any cell and try entering a value, label, or formula. The new entry shouldn't be accepted and you should get a message telling you the cell is protected.



Save your work. Now that you have added the <ORIGINAL> columns it's time again to save your work. Here you'll be saving the example for the second time so a file name doesn't have to be entered. You will be saving it on top of the old file on the disk. This erases the old file and replaces it with this latest version. Detailed instructions for saving your work are given on pages 32–33. Here is a summary of how to save a VisiCalc worksheet step by step (make sure you use the correct version).

A

B

How to save with the Apple II and the VisiCalc program:

1 Since you have already saved EXAMPLE.1.VC to a diskette, insert that same diskette into drive #1.

2 Move the cursor to the upper left corner of the worksheet by typing >**A1** (R).

3 To save the file on which you are working onto the disk, type /**SS**. The prompt line will read STORAGE: FILE FOR SAVING.

4 Since the file has already been saved once, use the (→) key to scroll through the diskette catalog until the file name EXAMPLE.1.VC appears on the edit line (see A opposite), then type (R).

5 The prompt line will read STORAGE: FILE EXISTS: Y TO REPLACE (see B opposite). Stop and make sure this is the file you want to replace. The VisiCalc program does not automatically store a file back under the same title; it stores it to whatever file you have scrolled on the edit line. Make sure the edit line title and the title of the file you want to save match; otherwise you will store the new file over the old, eliminating the old file forever.

VISICALC TIPS Protecting your templates

When a template is finished and saved, it is normally reloaded and filled in with data when needed. Problems can arise at this point. You, or others asked to use the template, can inadvertently erase or change formulas, delete rows or columns, or cause an unending list of difficulties. There are several ways to prevent this situation. You can write-protect diskettes so the master and other files can't be inadvertently overwritten by storing another VisiCalc file on top of them. Or, files can be "locked," if your computer has this feature. In addition, the Advanced Version has an option that can protect the contents of individual or groups of cells in a worksheet. The new option works in the following way:

1 Complete protection of a cell is obtained by typing the /**AMP** command, which prevents anything from being entered until the cell is unprotected by typing /**AMU**

2 Partial, or selective, protection is obtained with these commands:

- You can prevent labels from being overtyped (except with other labels) by typing /**AML**
- You can prevent numbers from being overtyped and erased by typing /**AM#**
- You can protect numbers and formulas from being overwritten with labels by typing /**AMV**

These formats can be entered either locally or globally, and can be added before data are entered, while they are being entered, or after they are entered. These formats can be replicated by themselves or along with other contents of a cell.

If you are sure, type **Y** and the disk drive will begin humming as the file is saved. If you want to save this file to a diskette other than the one in drive #1, you will have to address that drive (see your Apple owner's manual).

How to save with Apple III and/or the VisiCalc Advanced Version program:

1 Since you have already saved EXAMPLE.1.VC to a diskette, insert that same diskette into drive #2.

2 Move the cursor to the upper left corner of the worksheet by typing >**A1** (R).

3 To find the file and save the new version onto the diskette type **/SS**. The prompt line will read STORAGE: L S D Q # C. Type **S**. The prompt line will read STORAGE: FILE FOR SAVING.

4 Since the file has already been saved once, type **.D2** (R) and then use the (→) key to scroll through the disk catalog until the file name **EXAMPLE.1.VC** appears on the edit line. Then type (R).

5 The prompt line will read STORAGE: FILE EXISTS: Y TO REPLACE. Stop and make sure this is the file you want to replace. The VisiCalc program does not automatically store a file back under the same file name; it stores it to whatever file you have scrolled on the edit line. Make sure the edit line file name and the file name of the file you want to save match; otherwise you may store the new file over the old file, eliminating the old file forever.

If you are sure, type **Y** and the disk drive will begin humming as the file is saved. If you want to save this file to a diskette other than the one in drive #2, you will have to address that drive (see your Apple owner's manual).

Result The screen display and the worksheet in memory will remain unchanged, but the file is now saved to the diskette. You can turn off the Apple, or you can continue. If anything goes wrong, your work won't be lost. Because saving your work is so easy to do you should get into the habit of saving frequently. It is also prudent to write-protect the diskette at this point (see TIP on this page).

The following "What Ifs" shouldn't be saved. Putting a piece of the tape that came with your diskettes over the square write-protect cutout on the disk will insure you don't do so accidentally.

VISICALC TIPS Write-protecting your disks

Be sure not to overwrite. When you save a file, there is no automatic file name checking. For instance you can load file #1, work on it, and then store it back on the disk under file #2 by mistake. If you do this, the file you stored over will be erased. To protect valuable files against this possibility, you can either keep the master file on a separate diskette that is write-protected or you can protect individual files by using the Lock program on the Apple II or the write-protect command on the Apple III. See your owner's manual for complete instructions.

To write-protect an entire diskette, place a piece of tape (usually included with newly purchased disks) over the write-protect cutout on the side of the diskette. If you want to change the file at some point, just remove the tape before trying to save a file to the diskette.

APPLE TIPS How to overcome a disk full message

When you try to store a file and there isn't sufficient room left on the diskette, the prompt line will read STORAGE:FILE FOR SAVING FILE NAME ERROR:DISK FULL followed by a blinking cursor. To save the file, you can simply insert another initialized diskette (if it isn't initialized, and you are using the VisiCalc program on an Apple II, you can still do so without affecting the data in memory or on the screen) and save the file. If you don't have any other diskettes handy, you will have to make a choice whether to lose this file or to erase another one on the same diskette to make room for it. To see if there is another file you can erase, just type **/SD** and the edit line will read STORAGE:FILE TO DELETE. Use the (→) key to scroll through the disk catalog. If you find a file you can live without, type (R). The edit line will read DELETE FILE:TYPE Y TO CONFIRM. If you type **Y**, the file will be erased and you'll have room on the diskette to save the new file. Type any key other than Y and the command will be cancelled. If you don't find a file you can spare, scroll right on through the directory to take you back to the starting point without deleting any files.

Profits are called the bottom line of a business; and on an income statement, net profit, or net income, is literally the bottom line. It is determined by the interaction of all the line items listed above it, from net sales to taxes. What happens when one or more of these line items changes; how does that affect net income? When does that effect change from being slight to being significant? If an item changes and you want to keep net income the same, what other line items must change to accomplish this?

Asking these and other questions doesn't take much time; answering them does, or at least it takes more time than most business people can afford. To help out, the personal computer can act as a time-saver by quickly calculating the financial impact of changes. Also, if the questions are asked in a hypothetical manner the computer becomes a quasi-crystal ball, describing possible future outcomes.

Now that you've built a sample income statement on the computer, you're ready to use it to explore possible changes in the income statement. Your specific questions will undoubtedly reflect your experience and the nature and financial circumstances of your business. But almost everyone in business has questions and concerns about cost. Therefore, the model questions in this "What If" section cover two primary cost areas: cost of goods sold and operating expenses. Under each cost area, several questions will be asked and the information entered on the computer. Then you'll see the results.

During this step, you're using the income statement as a working document. With the aid of the computer, you're collecting or analyzing information that you can use for decision making. An accountant usually prepares an income statement for a business and can offer specialized advice about how to set one up. But here you are working over and exploring a statement on the computer. This doesn't replace an accountant, but it does provide you with a tool for decision making, one you can use now, in your office.

So, let's get to work, starting with "What if the cost of goods changes?"

BUSINESS TIPS Gross margin

In working with the "What Ifs" in the next steps, you need to understand gross margin, a key area of concern to almost every business. This is a ratio that measures the percentage of gross profit relative to net sales. And since gross profit is the amount of income from which all expenses except cost of goods are paid, a decline in gross margin can be a clear danger signal that a business may not be able to meet its expense obligations.

Here is a typical way to determine gross margin:

$$\text{Gross profit} = \text{Net sales} - \text{Cost of goods}$$

$$\text{Gross margin} = \frac{\text{Gross profit}}{\text{Net sales}}$$

Since the gross margin is made up of net sales and cost of goods sold, gross margin analysis can focus on either area. Generally, however, it is the cost of goods sold over which you have the most control.

What if the cost of goods changes?

WHAT IF 1 **Cost of goods increases.** Can companies entirely predict or control their cost of goods? Most can't, because few businesses are totally independent concerns; they depend upon other companies for supplies, products, services, or other factors that can affect their cost of goods. Manufacturers are particularly sensitive to potential changes in cost of goods. It frequently is their major cost category. So what happens when there is an increase in the cost of goods? Intuition tells you that an increase is not desirable, but how do you assess its effect? One way is to look at the effect of an increase in the cost of goods on gross profit, gross margin, and net income.

Since gross profit is net sales minus the cost of goods, it goes down when cost of goods goes up (and net sales remains the same). It's easy to see the change in the dollar

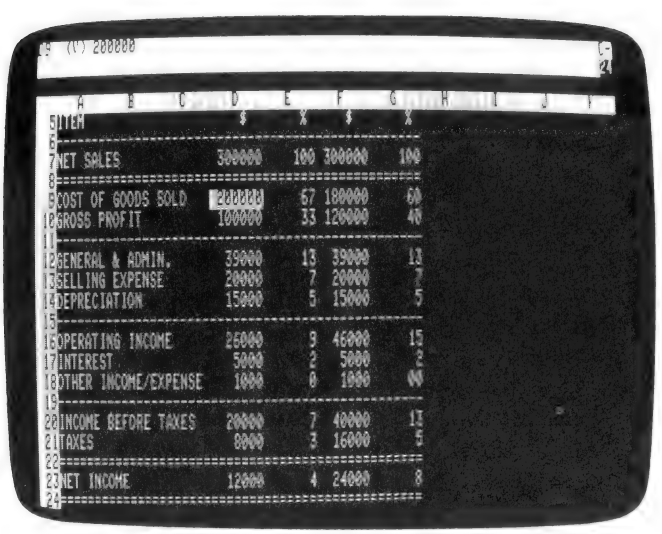


figure of gross profit; it's more revealing to see that change expressed in a ratio or percentage form. The gross margin is that ratio, defined as gross profit divided by net sales. Like all ratios, gross margin gives you a connection, a financial relationship, between two figures. In this case, gross margin tells you what the percentage of gross profit is relative to net sales. In our example, gross margin has already been calculated by the computer using the formula you entered while building the common-sized income statement. The result was 40%, the percentage in cell E(C)10.

Now, using the computer, let's see what happens to gross profit, gross margin, and the bottom line (net income) when there is an increase in the cost of goods from $180,000 to $200,000. When you enter this change, the computer will automatically recalculate gross margin, so you only need to enter the change in value. (*Note*: Since you don't want to save the "What If" examples, check that you have put a piece of tape that came with your diskette over the square write-protect cutout on the diskette.)

To enter

a change in recalculation from manual back to automatic
a change in cost of goods from $180,000 to $200,000

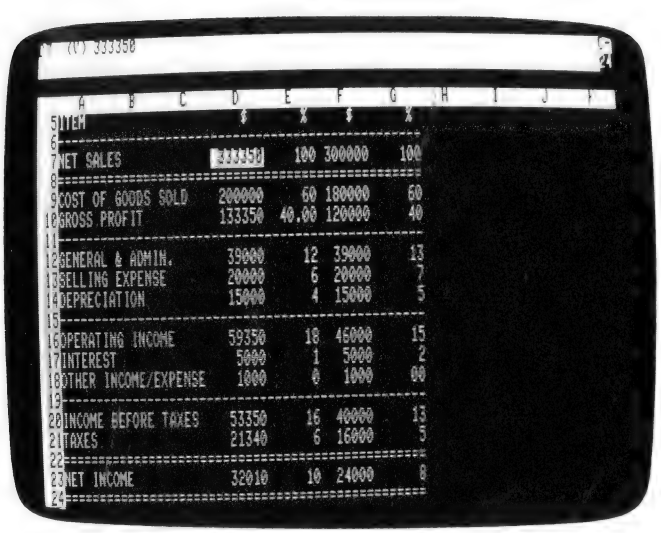
Type /GRA
>**D**(B)**9** and type **200000**(R)

Result The screen photo shows the results. The change in cost of goods from $180,000 to $200,000 increased its percentage of net sales from 60% to 67%. The gross profit on line 10 fell from $120,000 to $100,000, and the gross margin fell from 40% to 33%. The impact on the bottom line (net income) was also significant; it dropped from $24,000 (8%) to $12,000 (4%). The reason net income didn't fall even further is that the example has built taxes in as a constant 40% of income before taxes, so taxes also decrease.

ANALYSIS The results speak for themselves. Any increase in the cost of goods can cause a drop in profits. In such a situation, a manager would have to make a decision: Can the company afford the drop in profits and live with a 33% gross margin, or should the company try to increase sales or prices to make up for the increase? If the manager decides to try to maintain a gross margin and go for increased sales, this would raise an additional question. How much of an increase in sales would be needed to offset the increase in cost of goods and to restore the gross margin to its original 40%? You'll find the answer to that question in the next "What If."

Note: Don't restore the example to its original state. Keep the same figures in the columns, since the next example will use these figures.

WHAT IF 2 **Cost of goods increases but you want to hold the gross margin.** When an increase in cost of goods is the cause of a declining gross margin, the best way to offset the decrease is to increase net sales dollars. An increase in unit prices, for example, can increase net sales with no corresponding increase in cost of goods. In this example, you'll try changing the net sales figure of $300,000 until you find a figure that will restore the gross margin (not the gross profit) to its original 40%. You should manually enter values for net sales, perhaps starting with increases of $10,000 and then making finer adjustments.



	ITEM	$	%	$	%
7	NET SALES	333350	100	300000	100
9	COST OF GOODS SOLD	200000	60	180000	60
10	GROSS PROFIT	133350	40.00	120000	40
12	GENERAL & ADMIN.	39000	12	39000	13
13	SELLING EXPENSE	20000	6	20000	7
14	DEPRECIATION	15000	4	15000	5
16	OPERATING INCOME	59350	18	46000	15
17	INTEREST	5000	1	5000	2
18	OTHER INCOME/EXPENSE	1000	0	1000	00
20	INCOME BEFORE TAXES	53350	16	40000	13
21	TAXES	21340	6	16000	5
23	NET INCOME	32010	10	24000	8

To enter

a change in net sales (change net sales until you find a figure that results in a gross margin of 40%)
a local format to display the gross margin unrounded
Tip: Gross margin is rounded off to display percentages as whole numbers. Cell E(C)10 should temporarily be formatted using **/F$** to display percents out to two decimal places so it is easier to find the exact percentage you want.

Type >**E**(C)**10** and type **/F$**
>**D**(B)**7** and type (a variety of numbers larger than 300000)(R)

Result The answer, as shown in the screen photo, should be $333,350. That gives you a gross margin ratio of .4000, which multiplied by 100 becomes 40%.

ANALYSIS A small increase in cost of goods has to be offset by a larger increase in net sales to maintain the same gross margin. In this example, over $33,000 in net sales is needed to cover a $20,000 increase in cost of goods. A manager now has to ask: Can this be done, and if so, how?

WHAT IF 3 **Cost of goods decreases.** You've already explored on the computer the effect on profits of an increase in the cost of goods. Now let's examine the opposite situation, a decrease. Several actions can bring down the cost of goods, and a popular one today is increasing productivity. If goods are produced more efficiently, this decreases their cost. Suppose you and your employees came up with some productivity changes that reduced the cost of goods by $30,000, or 17%. What effect would that reduction have on gross profit, gross margin, and net income? You'll enter the change into the computer and in this case the VisiCalc program will do the calculations down the worksheet for you.

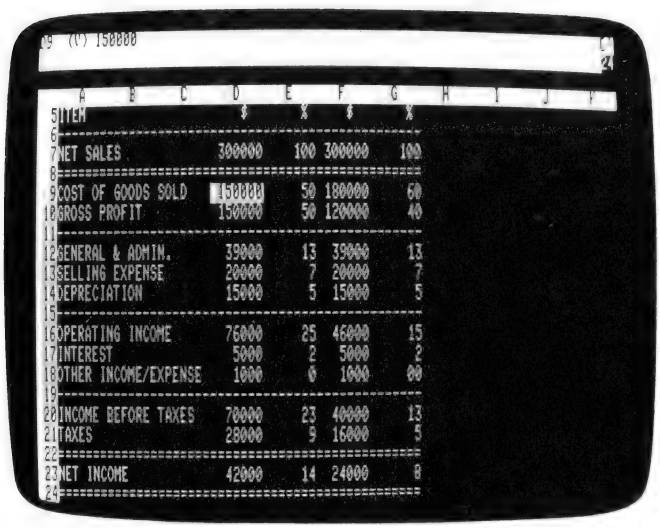
To restore
the example to its original state before proceeding with this example

Type >**D**(B)**7** and type **300000** (R)
>**E**(C)**10** and type **/FD**

To enter
a change in cost of goods sold from the original $180,000 (changed to $200,000 in the previous "What If") to $150,000

Type >**D**(B)**9** and type **150000** (R)

Result The decrease in cost of goods from $180,000 to $150,000 lowered its percentage of net sales from 60% to 50%. Net income on line 23 rose 75%, from 8% of net sales ($24,000) to 14% ($42,000), the result of a 17% decrease in the cost of goods. Gross margin also rose, from 40% to 50%.



	ITEM	$	%	$	%
7	NET SALES	300000	100	300000	100
9	COST OF GOODS SOLD	150000	50	180000	60
10	GROSS PROFIT	150000	50	120000	40
12	GENERAL & ADMIN.	39000	13	39000	13
13	SELLING EXPENSE	20000	7	20000	7
14	DEPRECIATION	15000	5	15000	5
16	OPERATING INCOME	76000	25	46000	15
17	INTEREST	5000	2	5000	2
18	OTHER INCOME/EXPENSE	1000	0	1000	00
20	INCOME BEFORE TAXES	70000	23	40000	13
21	TAXES	28000	9	16000	5
23	NET INCOME	42000	14	24000	8

ANALYSIS With the decreased cost of goods, a choice arises: Are the savings to remain in the company (and increase its net income) or are they to be passed on to the customers (by lowering the price of the goods)? Lowering prices would also lower sales dollars if the same number of products or units was sold. Therefore, prices are generally lowered only in the hope of increasing the number of units sold and thereby getting the same or higher sales dollars and capturing a larger market share.

Producing more units, however, also brings additional cost. If you want to keep the savings in the company (no change in unit price) and net sales dollars the same (no change in units produced), you can do this by increasing the markup on the goods.

What if operating expenses change?

WHAT IF 4 **Selling expense increases.** Selling expenses should be directly related to sales. You increase selling expense to generate more sales and thus more profits. The expense may be for advertising, promotion, or some method of increasing sales. Suppose you plan a new advertising and promotion campaign that will cost $10,000 more in selling expense. What effect will that increase have on net income?

To restore

the example to its original state

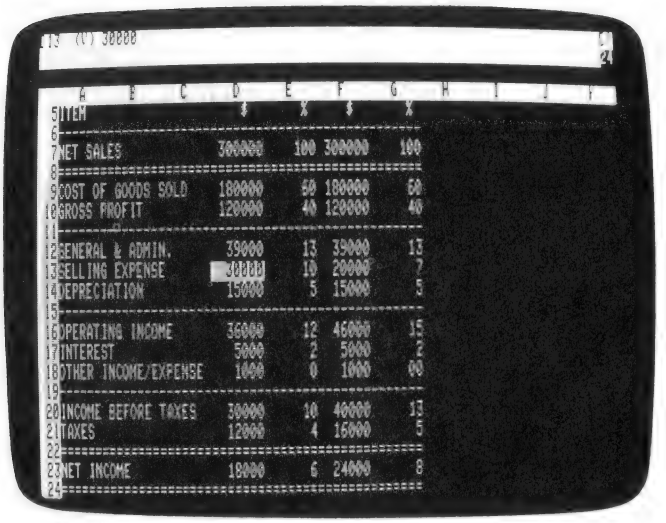
Type >**D**(B)**9** and type **.6***D(B)**7** (R)

To enter

a change in selling expense (cell D(B)13) from $20,000 to $30,000

Type >**D**(B)**13** and type **30000** (R)

Result The selling expense on row 13 changed from $20,000 to $30,000, and net income on row 23 decreased from $24,000 (8% of net sales) to $18,000 (6% of net sales).



	A	B	C	D	E	F	G	H	I	J
5	ITEM			$	%	$	%			
6										
7	NET SALES			300000	100	300000	100			
8										
9	COST OF GOODS SOLD			180000	60	180000	60			
10	GROSS PROFIT			120000	40	120000	40			
11										
12	GENERAL & ADMIN.			39000	13	39000	13			
13	SELLING EXPENSE			30000	10	20000	7			
14	DEPRECIATION			15000	5	15000	5			
15										
16	OPERATING INCOME			36000	12	46000	15			
17	INTEREST			5000	2	5000	2			
18	OTHER INCOME/EXPENSE			1000	0	1000	00			
19										
20	INCOME BEFORE TAXES			30000	10	40000	13			
21	TAXES			12000	4	16000	5			
22										
23	NET INCOME			18000	6	24000	8			
24										

ANALYSIS Often selling expenses are increased in an attempt to increase sales and profits. The question then arises: How much of an increase in sales is needed to cover the additional selling expense? As you'll see in the next "What If," more than a dollar for dollar increase is needed.

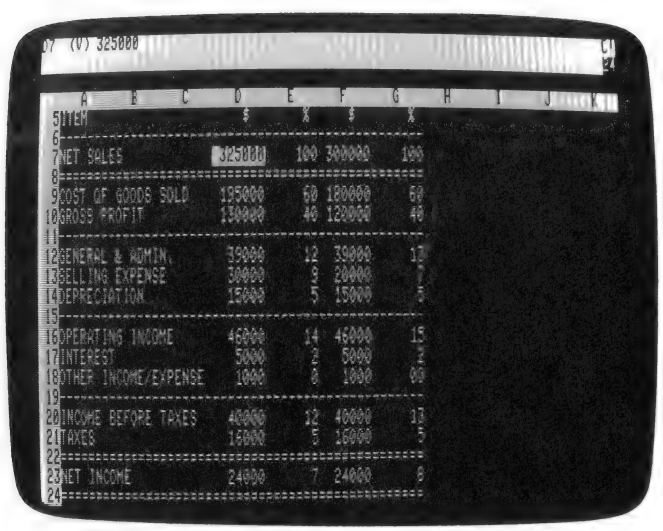
WHAT IF 5 **Selling expense increases but you want to hold net income.** Clearly, you intend to use the advertising and promotional campaign to increase sales. The last example points out the importance of doing that: Without a corresponding increase in sales, additional selling expenses lower net income. But exactly how much in additional sales do you need?

To enter

a change that will restore net income level

Type >**D**(B)**7** and type (a variety of net sales figures to see which will restore your original bottom line profit of 24000) (R)

Result You will find that a net sales increase of $25,000, from $300,000 to $325,000, is required to restore the bottom line profit (net income) to $24,000. It therefore takes a $25,000 sales increase to justify a $10,000 increase in selling expense.



	A	B	C	D	E	F	G	H	I	J
5	ITEM			$	%	$	%			
6										
7	NET SALES			325000	100	300000	100			
8										
9	COST OF GOODS SOLD			195000	60	180000	60			
10	GROSS PROFIT			130000	40	120000	40			
11										
12	GENERAL & ADMIN.			39000	12	39000	13			
13	SELLING EXPENSE			30000	9	20000	7			
14	DEPRECIATION			15000	5	15000	5			
15										
16	OPERATING INCOME			46000	14	46000	15			
17	INTEREST			5000	2	5000	2			
18	OTHER INCOME/EXPENSE			1000	0	1000	00			
19										
20	INCOME BEFORE TAXES			40000	12	40000	13			
21	TAXES			16000	5	16000	5			
22										
23	NET INCOME			24000	7	24000	8			
24										

ANALYSIS If sales can't reasonably be expected to increase by $25,000, then the $10,000 increase in selling expense can't be justified.

Also note that net margin has dropped from 8% to 7%, even though net income has returned to its previous level of $24,000. If you want to keep net margin at 8%, how much additional sales will be needed? You'll find the answer in the next "What If."

VISICALC TIPS Windows and fixed titles

With a small screen and a large VisiCalc worksheet, only a small section of your work can be seen at one time. There are, however, two commands that can greatly expand what you can see, the *window* and *fixed titles* commands.

The *window* command splits the screen into two parts, either horizontally (/**WH**) or vertically (/**WV**). The two screens can be scrolled together (/**WS**) or independently (/**WSU**). You can use this command to hold columns A-C (column A on the Advanced Version) on the screen in the left-hand window while scrolling across columns on the right-hand side of the template in the other window. When you explore "What Ifs" you can also use this command to keep one row, the current ratio for example, in the lower window while using the upper window to scroll up and down the example to enter data. The command /**W1** clears the screen of windows.

The *fixed titles* command can be used independently or in conjunction with the window command to hold specific rows or columns on the screen when scrolling. You can fix titles on the screen horizontally (/**TH**), vertically (/**TV**), or both horizontally and vertically (/**TB**). The rows or columns that are fixed with this command depend on the position of the cursor at the time the command is entered. Rows on or to the left of the cursor position and columns on or above the cursor position are the ones that will be fixed. The command /**TN** clears the screen of this command.

When you use the window and fixed titles commands simultaneously, different fixed title settings can be made in each window.

VISICALC TIPS Displaying numbers with more precision

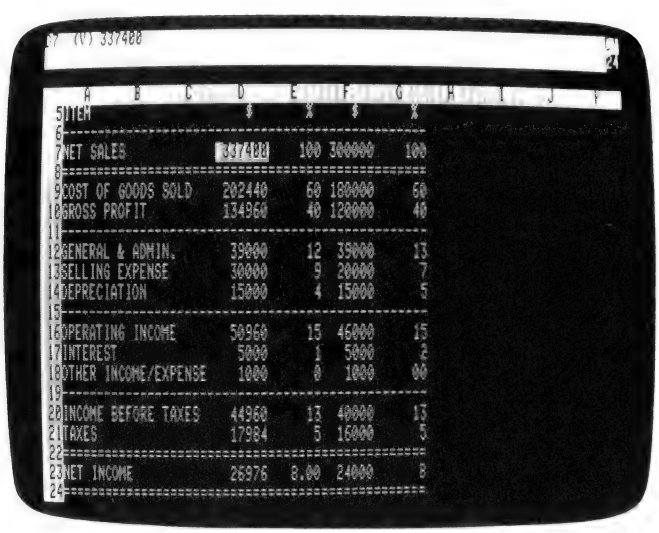
The global format for many financial statements should be set to integer (/**GFI**), since the display of cents adds no information of value. Although this setting simplifies the screen display and printed reports, it doesn't change the actual values in memory. However, in some cases you may want to see a value unrounded and displayed out to several decimal places. Here are three ways to do this:

- **The # command:** Place the cursor into the cell of interest and type # (using the shift key). The precise value of the cell will be displayed on the edit line. Be careful if you use this command in a cell containing a formula. Hitting the (R) key will convert the formula in the cell into the value displayed at the time the key was pressed. Use the **ESC** key to terminate the display without changing the formula.
- **The /F command:** You can use the /**F** command to put a local format into any cell you choose. Begin by positioning the cursor in the cell and then type /**F** followed by one of the following: **$** to display the value out to two decimal places; or **G** to display the value out to the maximum number of decimals that can be contained in the column width you are using.
- The Advanced Version allows you to spell out precisely the number of decimal places to be displayed or printed. Type /**AV2F** for two decimal places, /**AV3F** for three decimal places, /**AV4F** for four, and so forth.

WHAT IF 6 **Selling expense increases but you want to hold profit margin.** You're concerned that the net profit margin has slipped because it is more important in many respects than the dollar value of net income. Profits must keep pace with sales. A doubling of profits, for instance, on a quadrupling of sales isn't the best situation. You don't want to just sell more, you want to earn more profits proportionate to sales. Therefore, how much more is needed in net sales to restore your net profit margin?

To enter

a local format to display net income as a % of sales rounded out to two places



a guess at a net sales figure (cell D(B)7) that will restore the net profit margin (cell E(C)23) to its original 8%

Type >**E**(C)**23** and type **/F$**
>**D**(B)**7** and type (a variety of figures larger than 325,000 until you find one that restores the net profit margin in cell E(C)23 to 8%) (R)

Result You will discover that if the net profit margin is to be restored to its original 8% of net sales, the net sales increase has to be larger than $25,000. In fact, you will find that an increase of approximately $37,400 is needed to give a total net sales figure of $337,400.

ANALYSIS Effective sales managers review selling costs with great care. Their performance may even be partially evaluated on the contribution of sales to profit. An abnormally high selling-cost-to-sales ratio may lead to questions about efficiency of the sales force, and about sales and promotion methods. Conversely, a very low selling-cost-to-sales ratio may mean that the selling effort is not maximizing potential sales. For example, sales may be coming from large-volume customers, while smaller-volume buyers are being neglected. Somewhere in the middle between too high and too low is the most advantageous selling-cost-to-sales ratio. Also, remember that there is usually a time lag between when you embark on a marketing effort and when sales actually increase as a result of the promotional campaign and its expense.

WHAT IF 7 **Interest expense increases.** Given the high cost of borrowed money, interest expense is a cost area that must be closely examined. Let's assume that to cover your increased selling expenses of $10,000, you had to borrow that money at 18% interest. Eighteen percent on $10,000 equals $1,800 of additional interest expense. What effect will this have on net income (assuming the projected sales increase of $37,400 in the last example)?

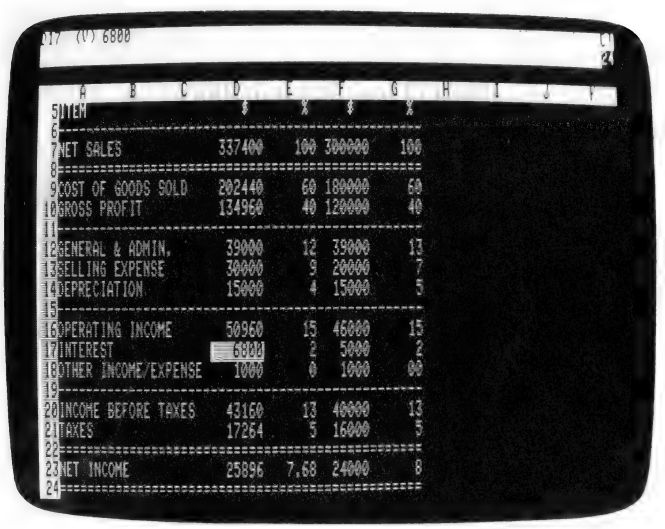
To enter

a change to increase interest expense from $5,000 to $6,800 to account for the increased interest of 18% on the $10,000 loan

Type >**D**(B)**17** and type **6800** (R)

Result Interest, as shown in cell D(B)17, changed from $5,000 to $6,800, and net income, on row 23, decreased from $26,976 to $25,896, a difference of $1,080.

ANALYSIS Any increase in interest expense is going to cause net income to decrease. However, note that net income is not reduced by the full amount of the interest expense but by a percentage of that amount after taxes. Any increase or decrease in a line item cost, such as interest, translates directly to the income before taxes line because those costs are treated as values, not percentages. They are added or subtracted as dollar amounts. However, the tax line comes below income before taxes, and it is calculated as a percentage on income before taxes. In our example, the tax rate is set at 40%. Therefore, net



income is decreased by the amount of the additional interest expense ($1,800) minus the tax rate on that amount (40% x $1,800 = $720). $1,800 minus $720 gives you $1,080, the difference in net income.

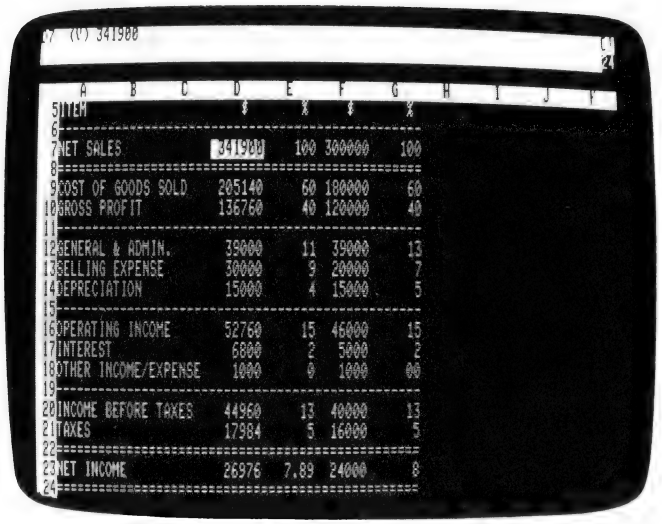
WHAT IF 8 **Interest expense increases but you want to maintain net income.** Suppose you want to cover the increased interest expense with increased sales, so that net income will be restored to its original amount. How much in additional sales is required?

To enter

a value for sales that restores your bottom line (net income) to the original $26,976 obtained prior to increased interest expense

Type >**D**(B)**7** and type (a variety of figures until you get the net income on line 23 back to $26,976) (R)

Result You will find that net sales on row 7 must be increased to $341,900 to cover the additional $1,800 interest expense. That means $4,500 more in sales (the difference between $337,400 and $341,900). The sales increase must be approximately three times the increased interest expense.



	A	B	C	D	E	F	G	H	I	J	K
5	ITEM			$	%	$	%				
6											
7	NET SALES			341900	100	300000	100				
8											
9	COST OF GOODS SOLD			205140	60	180000	60				
10	GROSS PROFIT			136760	40	120000	40				
11											
12	GENERAL & ADMIN.			39000	11	39000	13				
13	SELLING EXPENSE			30000	9	20000	7				
14	DEPRECIATION			15000	4	15000	5				
15											
16	OPERATING INCOME			52760	15	46000	15				
17	INTEREST			6800	2	5000	2				
18	OTHER INCOME/EXPENSE			1000	0	1000	00				
19											
20	INCOME BEFORE TAXES			44960	13	40000	13				
21	TAXES			17984	5	16000	5				
22											
23	NET INCOME			26976	7.89	24000	8				
24											

ANALYSIS There can be hidden expenses involved in an attempt to increase business through increased sales efforts. Additional interest expense, for example, was sufficient to reduce net income below a desired amount, and to require $4,500 in additional sales to restore it. Other hidden costs could result from increasing sales: for example, more inventory may be needed (also adding to interest expense if it's financed), or there may be increased freight, billing, collecting, and storage costs.

In our example, your advertising and promotional campaign, which costs $11,800 ($10,000 plus $1,800 interest expense), will have to generate $29,500 in additional net sales compared to the original example. To verify this, go to D(B)7 and enter 329500. That's almost a ratio of 3 to 1, net sales to selling expense, just to keep the same net income. Ideally, you want to increase net income, so that means you want even more in net sales. Can you do it? We can't answer that question here. The computer doesn't give you an answer either, but it has given you some hard facts to use in your decision making.

APPLE TIPS Recovering from accidental resets

The only thing worse than hitting the reset button is pulling the plug or having the power fail. At least when you hit reset (on the Apple II, it's depressingly close to the (R) key), you can still save the file on which you're working. Just type /**S**. The prompt line will read STORAGE:L S D I Q #. Although you will see the normal complement of commands, only a few of them will work. To save the file type **S** and use the (→) key to scroll to the file name you want to save the file under. Then type (R). If the file hasn't been previously saved, type in the file name and then type (R). Your file will be saved. To get back to it, you will have to reload the VisiCalc Program diskette and then the file which you saved.

Summary: The income statement

The other costs of producing profits

It takes, or costs, money to make money. We have examined three primary cost areas — cost of goods sold, selling expenses, and interest expense. With the help of the VisiCalc program, we saw how changes in those areas affect the bottom line (net income). For most small firms, cost of goods sold is the major expense. But there are many more cost items that should be monitored and controlled on a regular basis. Some of these line items, which would be included in a more detailed income statement (see Chapter 6) are briefly explained below.

Wages and salaries can be a major cost item under general and administrative expenses. When these costs are listed separately on the income statement, several additional operating ratios can be computed. For example, the number of employees should be related to the level of business activity or sales. The ratio of wages and salaries to sales would indicate, over time, whether this is in line or out of line with sales activity. When considering wage or salary increases, you can use the ratio to see if there has been a sufficient increase in sales to justify the raises. Or you can see the effect of the raises on net income.

Other ratios that use wages, salaries, and employee numbers are the sales per employee ratio or sales per dollar of wages and salaries ratio. These ratios are a useful measure of employee productivity. The larger the ratio, the more productive the employees: that is, the more sales per employee or per wage dollar. The ratios can be used as one check on whether raises are justified in terms of employee performance and productivity.

Owner's compensation can also be listed as a separate line item under general and administrative expenses. It is the amount of money that is paid to the owner in the forms of salary and benefits. Even for proprietorships and partnerships, it is usually a good idea to carry owner's compensation as an expense item instead of including it in net income. Then you can calculate a ratio that compares owner compensation (an expense) with net sales. That allows you to determine, over time, whether owner's compensation is in line with the level of business activity. And you can see if additional owner salary is warranted. Another reason for you to use this ratio is that lenders and investors use it. If the ratio is too high, they may not want to lend or invest money in your business. They may even check your owner compensation ratio against industry average ratios. (Industry averages are covered in Chapter 7.)

Occupancy cost is another area to track. Paying too much rent for your level of sales can make your business unprofitable. By listing occupancy cost as a separate line item, you can calculate an occupancy cost to net sales ratio. Your computer and the VisiCalc program can help you quickly determine whether the ratio is too high or too low, and whether you should move to remain profitable, and if you can afford to.

Other expenses can be listed separately and tracked as operating ratios to improve your management and control. Remember, sales and expenses determine how profitable or unprofitable a business is. Using the VisiCalc program, you can assess the effect of increasing or decreasing costs and sales on net income. This can help you track company performance and make better management decisions. Later, in Chapter 6 you'll be shown how to put these cost areas on your computer.

In this chapter we have demonstrated the usefulness of the income statement and its operating ratios. The income statement, or profit-and-loss (P&L) statement, is a firm's track record during any period of time. It shows business and management performance. As a management tool, the income statement gives you much of the information needed to control expenses and costs of doing business. It focuses your attention on whether you are profitable or not, and what is making you profitable or unprofitable.

Like the balance sheet, which we cover in the next chapter, the income statement is a standard accounting statement that others use to help determine whether their investment is profitable, their loans are safe, and the firm is effectively and efficiently managed. Owner/stockholders, lenders, and managers all use the income statement to assess a business' performance.

4 The balance sheet

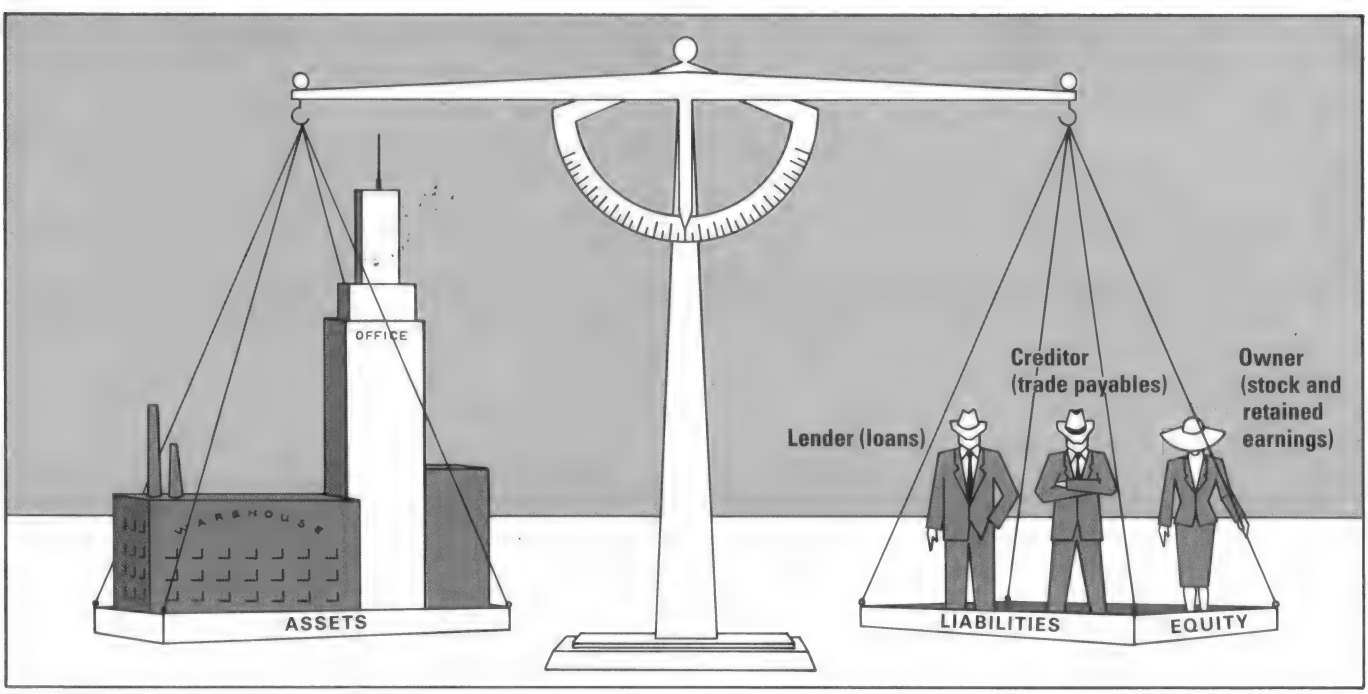
The balance sheet is appropriately named: it must always balance. There are two sections of a balance sheet. The first (called the *left side* if the two sections are shown side by side) shows the assets (what the firm owns). The second section (or *right side*) shows the liabilities (the firm's debts) and the owner equity, which together represent the claims against the assets, or how the firm paid for its assets. The total assets must always equal the combined total of the liabilities and the owner equity (or capital), which is why this financial statement is called a balance sheet.

The detail needed for a real balance sheet varies from business to business. In the example used in this book, the balance sheet, like the income statement entered previously, is condensed to simplify the explanations. This condensation, however, includes the major asset and liability items found on more detailed balance sheets. More detailed statements break down the main asset and liability categories, used in the example, into smaller subdivisions. Some commonly used breakdowns are discussed in Chapter 6.

The balance sheet is a snapshot of a firm's condition at a given point in time, such as the end of a month, a quarter, or a year. It can reveal the health of a company and its condition, or profit potential. In simple terms, a balance sheet is a record of what the company has done with its income and the money provided by creditors, lenders, and stockholders. Managers and owners can use the balance sheet not only for evaluating financial condition, but also for setting management and company goals.

The balance sheet is also a financial window through which others (such as bankers, creditors, and stockholders) can look at your company. Since you often are required to meet their needs as well as your own, it is important that you understand how a balance sheet is constructed and what it means. Then, when others look at your company's balance sheet, you'll know what they are looking for and why.

You can also use a balance sheet as a working document, a guide for exploring decisions (just as you did in the last chapter with the income statement). Before you can do this (in the "What If" section of this chapter), you need to build a sample balance sheet like the one illustrated on page 49. As the balance sheet is entered on the computer, the elements that make up this important management tool will be explained. Once it's built, you'll see how daily business decisions affect a company's condition, as reflected on the balance sheet.



On the typical balance sheet, assets (what you've got) are shown on the left; liabilities and equity (how you got them) are shown on the right. Assets always equal liabilities plus equity (net worth). Both sides (right and left) must balance — thus, a balance sheet. *Think of business as a game with three players, all of whom are responsible for creating the assets. Under liabilities, there are two main players: lenders and creditors. Their stakes in the business are loans and trade payables. The equity section is the owner's share of the pot (assets), in the form of stock (initial investments) and retained earnings (profits owners have left in the business).*

STEP 1 **Restore the example to its original state** or clear the screen and reload the original example from the data diskette on which it's stored. In the previous chapter, changes were made in the example when "What Ifs" were explored. If you are beginning this chapter immediately after having finished Chapter 3 (without turning off the computer), you must restore your example to its original state before proceeding any further, otherwise your results will differ from those discussed in the book. (Since changes made when exploring "What Ifs" should never be saved on the diskette, the example saved and write-protected should be the one originally entered.) There are three ways to restore the example:

1 The surest method of restoring the example is to clear the screen with the **/CY** command (**/CAY** on the Advanced Version), and then reload the original Example.1 from its data diskette. This isn't suggested after each "What If," but is the best way to insure accuracy when you move to a new chapter or new section.

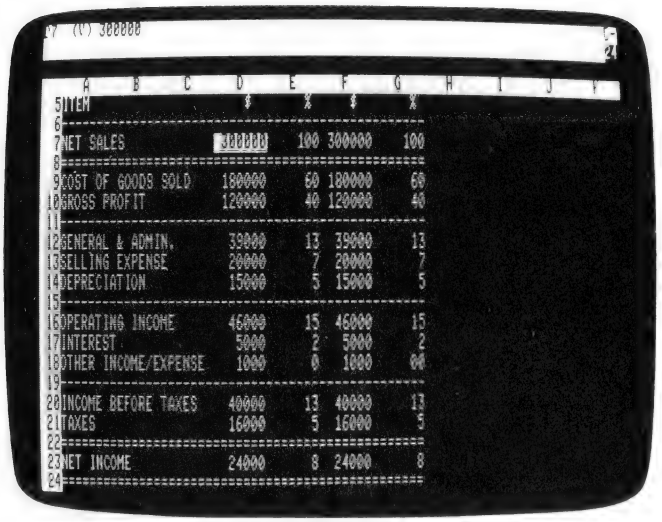
2 You can follow the instructions given in the "What If" under the heading "To restore." Typing the changes exactly as given will restore the example to its original condition.

3 You can also make a row-by-row comparison of the numbers shown on your screen display in column D(B) with the unchanging entries in the <ORIGINAL> column, column F(D). If any of the numbers are different, change column D(B) to match column F(D). When doing this, be sure recalculation is set to automatic by typing **/GRA**, so that any corrections you make will be reflected on the rows using the corrected entry in their formulas.

To be sure your example is restored, check the totals in column D(B) against those in column F(D). They should be the same. For instance, NET INCOME (row 23) should read **24000** in both columns. If the columns don't agree, the example has not been completely restored.

Be sure not to type over formulas unless instructed to do so. Normally you should change only those figures that are values. You can tell if the number shown in a cell is a value or formula by looking at the cell contents line on the top of the VisiCalc screen display when your cursor is positioned in the cell in question.

If you have any trouble restoring the example, refer to "Troubleshooting Example.1" on page 162. If not, you can now proceed to enter the example.



VISICALC TIPS Reloading your example

If you have saved the example at the end of the previous chapter you can continue with this chapter without any preparation. If, however, you turned the computer off after saving the example you will have to reload it to resume working. To reload the example follow these steps:

1 Load the VisiCalc Program diskette into the computer. (See page 19.)

2 When the characteristic VisiCalc display appears on the screen, remove the VisiCalc Program diskette (or in the case of the Advanced Version the Loader diskette) from the drive and file it carefully in a safe place.

3 Insert the data diskette on which you saved the example into drive #1.
The prompt lines reads STORAGE: FILE TO LOAD
Type **EXAMPLE.1.VC** (R) (Or you could use the (→) key to scroll through the files until EXAMPLE.1.VC appears on the screen and then type (R))

The drive will begin to spin and its red light will come on. In a few seconds the drive will stop and your example should appear on the screen exactly as it appeared when last saved.

When the example is reloaded, some cells may have **ERROR** messages appear in them. To remove these **ERROR** messages, just press the **SHIFT** and **!** keys simultaneously to recalculate the worksheet.

Entering the example

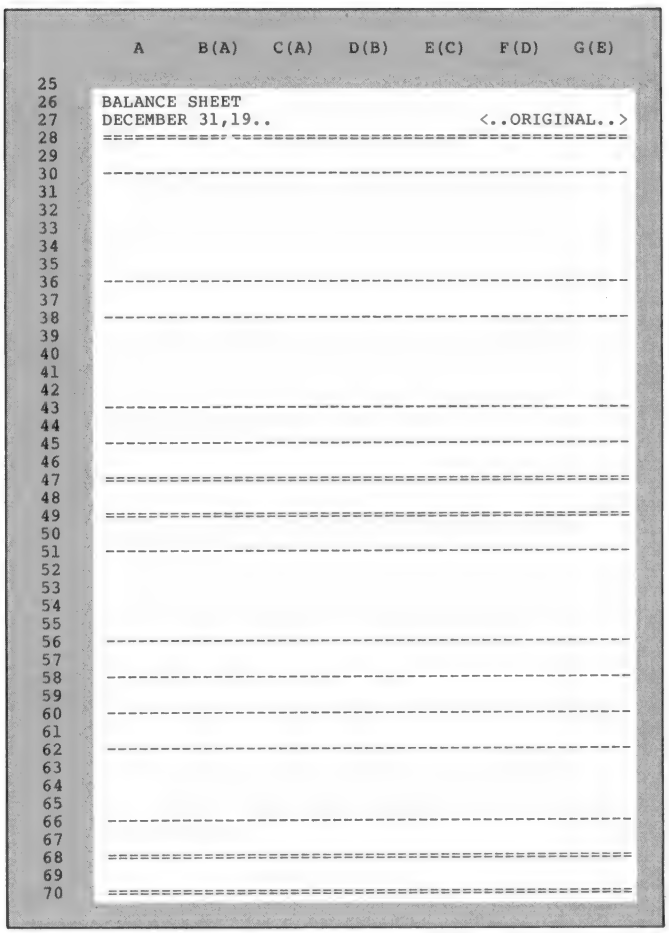
You'll now enter a sample balance sheet into the computer on the VisiCalc spreadsheet, right below the income statement entered in Chapter 3. You'll then use the two financial statements, arranged this way, when you explore ratios in Chapter 5. Data will be drawn from one or both of them.

In entering the example, you'll follow the same basic steps you used when you entered the sample income statement in the last chapter.

```
BALANCE SHEET
DECEMBER 31,19..                          <..ORIGINAL..>
=============================================================
ASSETS:                      $       %       $       %
-------------------------------------------------------------
<CURRENT ASSETS>
CASH                      30000      13   30000      13
ACCOUNTS RECEIVABLE       40000      17   40000      17
INVENTORY                 60000      26   60000      26
PREPAID EXPENSE           10000       4   10000       4
-------------------------------------------------------------
TOTAL CURRENT ASSETS     140000      61  140000      61
-------------------------------------------------------------
<FIXED ASSETS>
BLDG.& EQUIPMENT         120000      52  120000      52
LESS ACCUM.DEPREC.       -70000     -30  -70000     -30
LAND                      30000      13   30000      13
-------------------------------------------------------------
TOTAL FIXED ASSETS        80000      35   80000      35
-------------------------------------------------------------
OTHER ASSETS              10000       4   10000       4
=============================================================
TOTAL ASSETS             230000     100  230000     100
=============================================================
LIABILITIES:                 $       %       $       %
-------------------------------------------------------------
<CURRENT LIABILITIES>
ACCOUNTS PAYABLE          30000      13   30000      13
ACCR'D WAGES & TAXES      10000       4   10000       4
OTHER CURRENT LIAB.       20000       9   20000       9
-------------------------------------------------------------
TOT.CRN'T.LIABILITIES     60000      26   60000      26
-------------------------------------------------------------
LONG TERM DEBT            40000      17   40000      17
-------------------------------------------------------------
TOTAL LIABILITIES        100000      43  100000      43
-------------------------------------------------------------
<OWNER EQUITY>
COMMON STOCK              60000      26   60000      26
RETAINED EARNINGS         70000      30   70000      30
-------------------------------------------------------------
TOTAL OWNER EQUITY       130000      57  130000      57
=============================================================
```

Step One

Enter headings, dates, and ruled lines for the sample balance sheet.



ROWS 26–27 **Labels** to identify and date the balance sheet must be entered. Since the balance sheet is a "snapshot" of a firm's financial situation at a single point in time, the date on row 27 is a single day. This date is usually the last day in a month, a quarter, or a fiscal (not necessarily a calendar) year.

To enter

a label to identify the balance sheet and the date it represents

Type >**A26** and type **BALANCE** →
>**B**(A)**26** and type **"(S)SHEET** R

>**A27** and type **DECEMBE** →
>**B**(A)**27** and type **R 31,19** →
>**C**(A)**27** and type **"..** →→→
>**F**(D)**27** and type **"<..ORIG** →
>**G**(E)**27** and type **INAL..>** R

ROW 28 **Double ruled lines** are entered across the screen. There are several ways to enter ruled lines with the VisiCalc program, and here (as in Chapter 3) we will use the method that allows them to be moved with the DIF command (explained on pages 34–35).

To enter

double ruled lines from column A to column G(E) on rows 28, 47, 49, 68, and 70

Type >**A28** and type **"= = = = = = =** R (quotation mark followed by 7 equals signs), or if using the Advanced Version, type
"= =
R (quotation mark followed by 21 equals signs).

To replicate

from one cell to a range

Type >**A28** and type **/R** R **B28.G**(E)**28** R

from one range to other ranges

Type >**A28** and type **/R.G**(E)**28** R **A47** R
>**A28** and type **/R.G**(E)**28** R **A49** R
>**A28** and type **/R.G**(E)**28** R **A68** R
>**A28** and type **/R.G**(E)**28** R **A70** R

Result The first step should have put a double ruled line in cell A28 (on row 28), and the second step should have replicated it across the screen to column G(E). (On the Apple II with a 40-column screen, you will have to scroll the screen to the left to see the entire length of the line.) The last step should have put the double ruled line on rows 47, 49, 68, and 70.

ROW 30 **Single ruled lines** are entered across the screen to separate major categories on the balance sheet. These rules will be entered using the same replication techniques as in the previous step.

To enter

single ruled lines from column A to column E(C) on rows 30, 36, 38, 43, 45, 51, 56, 58, 60, 62, and 66

Type >**A30** and type **"-------** R (quotation mark followed by 7 minus signs), or if using the Advanced Version, type
"-------------------- R
(quotation mark followed by 21 minus signs).

To replicate

from one cell to a range

Type >**A30** and type **/R** R **B30.G**(E)**30** R

from one range to other ranges

Type >**A30** and type **/R.G**(E)**30** R **A36** R
>**A30** and type **/R.G**(E)**30** R **A38** R
>**A30** and type **/R.G**(E)**30** R **A43** R
>**A30** and type **/R.G**(E)**30** R **A45** R
>**A30** and type **/R.G**(E)**30** R **A51** R
>**A30** and type **/R.G**(E)**30** R **A56** R
>**A30** and type **/R.G**(E)**30** R **A58** R
>**A30** and type **/R.G**(E)**30** R **A60** R
>**A30** and type **/R.G**(E)**30** R **A62** R
>**A30** and type **/R.G**(E)**30** R **A66** R

Result The first step should have put a single ruled line into cell A30, and the second step should have replicated it out to column G(E). The last step should have put the single ruled line onto rows 36, 38, 43, 45, 51, 56, 58, 60, 62, and 66.

Step Two

Add line item labels, values, and formulas in columns A-D (columns A-B for the Advanced Version).

```
      A      B(A)    C(A)    D(B)    E(C)    F(D)    G(E)

25
26    BALANCE SHEET
27    DECEMBER 31,19..                          <..ORIGINAL..>
28    ==============================================
29    ASSETS:                          $       %       $
30    ----------------------------------------------
31    <CURRENT ASSETS>
32    CASH                          30000
33    ACCOUNTS RECEIVABLE           40000
34    INVENTORY                     60000
35    PREPAID EXPENSE               10000
36    ----------------------------------------------
37    TOTAL CURRENT ASSETS         140000
38    ----------------------------------------------
39    <FIXED ASSETS>
40    BLDG.& EQUIPMENT             120000
41    LESS ACCUM.DEPREC.           -70000
42    LAND                          30000
43    ----------------------------------------------
44    TOTAL FIXED ASSETS            80000
45    ----------------------------------------------
46    OTHER ASSETS                  10000
47    ==============================================
48    TOTAL ASSETS                 230000
49    ==============================================
50    LIABILITIES:                     $       %
51    ----------------------------------------------
52    <CURRENT LIABILITIES>
53    ACCOUNTS PAYABLE              30000
54    ACCR'D WAGES & TAXES          10000
55    OTHER CURRENT LIAB.           20000
56    ----------------------------------------------
57    TOT.CRN'T.LIABILITIES         60000
58    ----------------------------------------------
59    LONG TERM DEBT                40000
60    ----------------------------------------------
61    TOTAL LIABILITIES            100000
62    ----------------------------------------------
63    <OWNER EQUITY>
64    COMMON STOCK                  60000
65    RETAINED EARNINGS             70000
66    ----------------------------------------------
67    TOTAL OWNER EQUITY           130000
68    ==============================================
69    TOT.LIAB. & EQUITY           230000
70    ==============================================
```

ROW **29** **Assets** are everything the business owns (that has money value). They commonly include cash, accounts receivable, notes receivable, inventories, land, buildings, machinery, equipment, and other investments. Assets are generally classified into current assets, fixed assets, and other assets. These classifications will be used as you enter assets onto the balance sheet.

To enter

a label to identify this section of the balance sheet as assets
labels to identify the $(dollar) and %(percent) columns
phantom instructions for the DIF command

Type >**A29** and type **ASSETS:** →→→
>**D**(B)**29** and type **"(S)(S)(S)(S)$(S)(S)DIF2 LOWER RIGHT E**(C)**70** →
>**E**(C)**29** and type **"(S)(S)(S)(S)(S)%** →
>**F**(D)**29** and type **"(S)(S)(S)(S)$(S)(S)LOAD DIF2 HERE** R

ROW **31** **Current assets** are normally expected to flow into cash in the course of the firm's operating year. Ordinarily these include cash, marketable securities with maturities of less than a year (such as Treasury bills or money market securities), accounts receivable, notes receivable, inventory, and other current assets or prepaid expenses (such as insurance payments). Prepaid expenses and other current assets may not actually be converted to cash. They have value and are carried as current assets because they represent the avoidance of future cash outflows from the firm. Although some firms may consider items such as cash-surrender value of life insurance as current, they should really be treated as noncurrent or other assets, since in the normal course of business they will not be converted to cash. (Current assets are sometimes called *working capital assets.*)

To enter

a label to identify current assets

Type >**A31** and type **"<CURREN** →
>**B**(A)**31** and type **T ASSET** →
>**C**(A)**31** and type **S>** R

ROW **32** **Cash** is the total cash in the bank or on hand. Often firms will include the value of any marketable securities (investments with maturities of less than a year, such as Treasury bills or commercial paper) in the cash account if these securities do not amount to much in dollar value.

To enter

a label to identify cash
a value of $30,000

Type >**A32** and type **CASH** →→→
>**D**(B)**32** and type **30000** R

ROW 33 **Accounts receivable** are what trade customers owe the company. Usually, accounts receivable come from credit sales to customers, and are expected to be collected within the year. Some customers, however, won't pay up, so the balance in the accounts receivable account should be adjusted for the expected percent of bad debts. This is accomplished by establishing a *reserve for bad debts* account, which is subtracted from the accounts receivable. Sometimes notes receivable (loans made by the company to customers, the owner/manager, or stockholders) are also included under accounts receivable. (Accounts receivable are also called *trade receivables*, *trade credit due*, or *net receivables*.)

To enter
a label to identify accounts receivable
a value of $40,000

Type >**A33** and type **ACCOUNT** ⏎
>**B**(A)**33** and type **S RECEI** ⏎
>**C**(A)**33** and type **VABLE** ⏎
>**D**(B)**33** and type **40000** ®

ROW 34 **Inventory** for a manufacturer is the sum of raw material, material in process, and finished merchandise on hand or in process. It does not include supplies unless they are for sale. For retailers and wholesalers, inventory is the stock of salable goods on hand. Usually, inventory is valued conservatively, according to standard accounting methods. For instance, it is valued at cost or market value, whichever is lower. (See "Inventory Valuation Methods" on page 87.)

To enter
a label to identify inventory
a value of $60,000

Type >**A34** and type **INVENTO** ⏎
>**B**(A)**34** and type **RY** ⏎⏎
>**D**(B)**34** and type **60000** ®

ROW 35 **Prepaid expenses** are expenses that are paid before receiving the service purchased by the expenditure. They might include, for example, insurance premiums, which are paid at the beginning of the period that the insurance covers. Another example is rent, if paid in advance. For new firms just starting up, deposits for electric service, telephones, and some types of equipment would be considered prepaid expenses.

To enter
a label to identify prepaid expenses
a value of $10,000

Type>**A35** and type **PREPAID** ⏎
>**B**(A)**35** and type **"(S)EXPENS** ⏎
>**C**(A)**35** and type **E** ⏎
>**D**(B)**35** and type **10000** ®

ROW 37 **Total current assets** is the sum of all cash, marketable securities, accounts receivable, inventory, and prepaid expenses. The computer will total current assets by using a formula that you'll enter.

To enter
a label to identify total current assets
a formula to calculate the sum of all current assets

Type >**A37** and type **TOTAL C** ⏎
>**B**(A)**37** and type **URRENT** ⏎
>**C**(A)**37** and type **ASSETS** ⏎
>**D**(B)**37** and type **@SUM(D**(B)**30.D**(B)**36)** ®

Result The figure **140000** should appear in cell D(B)37.

ROW 39 **Fixed assets** are those acquired for long-term use in the business, although "fixed" doesn't mean absolutely permanent. These assets are typically not for resale, and they are recorded on the balance sheet at their cost to the business less accumulated depreciation. Examples include land (which is not depreciable for most businesses), buildings, leasehold improvements, fixtures, furniture, machinery, tools, and equipment. A fixed asset is treated as a long-term cost, with the cost allocated as depreciation over the working life of the asset. Thus, the value of a fixed asset shown on the balance sheet is not necessarily the same as the resale value of the asset.

To enter
a label to identify fixed assets

Type >**A39** and type **"<FIXED** ⏎
>**B**(A)**39** and type **ASSETS>** ®

ROW 40 **Buildings and equipment** are fixed assets used in the normal course of business. They are carried on the balance sheet at their original cost plus the cost of permanent improvements. For equipment or machinery, delivery and installation costs are also included.

To enter

a label to identify buildings and equipment
a value of $120,000

Type >**A40** and type **BLDG.&** →
>**B**(A)**40** and type **EQUIPME** →
>**C**(A)**40** and type **NT** →
>**D**(B)**40** and type **120000** R

ROW 41 **Accumulated depreciation** is a deducted item (see row 39, Fixed Assets). *Depreciate* means to decrease in value. Each year, buildings and equipment depreciate, and over the years, that depreciation adds up. Since the assets are worth less, their accumulated depreciation must be subtracted from their original cost (which you just entered on row 40), and their approximate present worth or book value listed on the balance sheet. To get an accumulated depreciation amount, you figure the depreciation for each item during the present accounting period, find the total for all items, and then add that sum to the total accumulated depreciation figure from the last accounting period. The depreciation taken this period would be equal to depreciation expense on the income statement.

The amount of depreciation allowed each period and the useful life of assets is governed by Internal Revenue Service regulations and federal tax laws. Amortization, which is basically the same thing as depreciation, is taken for intangible assets such as goodwill or patents and some types of tangible fixed assets such as leasehold improvements.

To enter

a label to identify less accumulated depreciation
a value of $70,000

Type >**A41** and type **LESS AC** →
>**B**(A)**41** and type **CUM.DEP** →
>**C**(A)**41** and type **REC.** →
>**D**(B)**41** and type **-70000** R

ROW 42 **Land** is the property, other than buildings and equipment, owned by the business. It is a fixed asset which is carried at original cost and, for most firms, is not depreciable.

To enter

a label to identify land
a value of $30,000

Type >**A42** and type **LAND** →→→
>**D**(B)**42** and type **30000** R

ROW 44 **Total fixed assets** (also called *net fixed* assets) is the total of buildings and equipment and land (property), less accumulated depreciation. The computer, using a formula you'll enter, will calculate total fixed assets for you.

To enter

a label to identify total fixed assets
a formula that will calculate the sum of all fixed assets

Type >**A44** and type **TOTAL F** →
>**B**(A)**44** and type **IXED AS** →
>**C**(A)**44** and type **SETS** →
>**D**(B)**44** and type **@SUM(D**(B)**38.D**(B)**43)** R

Result The figure 80000 should appear in cell D(B)44.

ROW 46 **Other assets** include anything owned, or to which a firm has legal right, that is not included in current assets or total fixed assets. Investments in other companies and intangible assets such as goodwill, patents, trademarks, and organizational costs are examples of other assets. Intangible assets may be amortized over their useful legal life (which is determined by the IRS).

To enter

a label to identify other assets
a value of $10,000

Type >**A46** and type **OTHER A** →
>**B**(A)**46** and type **SSETS** →→
>**D**(B)**46** and type **10000** R

ROW 48 **Total assets** is the sum of assets in all categories: current, fixed, and other. Notice that the assets are arranged from most liquid (convertible to cash) to least liquid on the balance sheet. Accounts receivable, for example, can be converted to cash faster

than inventory, which can be converted to cash faster than equipment, and so forth.

To enter

a label to identify total assets
a formula that will calculate the sum of all asset subtotals

Type >**A48** and type **TOTAL A** ⏎
>**B**(A)**48** and type **SSETS** ⏎⏎
>**D**(B)**48** and type **+D**(B)**37+D**(B)**44+D**(B)**46** ⏎

Result The figure **230000** should appear in cell D(B)48 for total assets.

ROW 50 **Liabilities** include claims of creditors against the assets of the business — in other words, debts owed by the business. They do not include owners' potential claims (which are listed under equity). Among the more common liabilities are accounts payable, accrued wages, notes payable, long-term debt, and accrued taxes.

To enter

a label to identify this section of the balance sheet as liabilities
labels to identify the $ and % columns

Type >**A50** and type **LIABILI** ⏎
>**B**(A)**50** and type **TIES:** ⏎⏎
>**D**(B)**50** and type **"(S)(S)(S)(S)$** ⏎
>**E**(C)**50** and type **"(S)(S)(S)(S)(S)%** ⏎

ROW 52 **Current liabilities** are short-term obligations for the payment of cash, due on demand or within a year. Such liabilities ordinarily include notes and accounts payable for merchandise, open loans payable, short-term bank loans, taxes, and other accruals. Other short-term obligations, such as maturing debt obligations, financing agreements and the like, also fall within the category of current liabilities.

To enter

a label to identify current liabilities

Type >**A52** and type **"<CURREN** ⏎
>**B**(A)**52** and type **T LIABI** ⏎
>**C**(A)**52** and type **LITIES>** ⏎

ROW 53 **Accounts payable** include what a company owes others for goods or services that have been provided to that company. They are the result of others providing the firm with credit, and are sometimes known as *trade payables* or *trade credit due.* Notes owed to supplier companies can also be included under accounts payable.

To enter

a label to identify accounts payable
a value of $30,000

Type >**A53** and type **ACCOUNT** ⏎
>**B**(A)**53** and type **S PAYAB** ⏎
>**C**(A)**53** and type **LE** ⏎
>**D**(B)**53** and type **30000** ⏎

ROW 54 **Accrued wages and taxes** is the line where the accumulated wages and taxes that are due but not yet paid for the year are entered on the balance sheet. These expenses are charged against profits of the current year, although they will not be paid until later. Bonuses owed, but not paid, are included. Unpaid wages must be accounted for whenever the last day of the accounting period does not coincide with the last day of the pay period.

To enter

a label to identify accrued wages and taxes
a value of $10,000

Type >**A54** and type **ACCR'D** ⏎
>**B**(A)**54** and type **WAGES &** ⏎
>**C**(A)**54** and type **"(S)TAXES** ⏎
>**D**(B)**54** and type **10000** ⏎

ROW 55 **Other current liabilities** include any obligations that require payment within the next twelve months. They include items such as dividends payable or unearned income. Unearned income arises when you receive payment in advance of providing the goods or service. Some future service or product is due instead of cash. Therefore, unearned income is listed as a liability; you owe a service or product. To keep the balance sheet simple, we will later assume that notes payable, seasonal and demand loans, and current portion of long-term debt are carried under other current liabilities. Normally, you would list them separately under current liabilities.

To enter

a label to identify other current liabilities
a value of $20,000

Type >**A55** and type **OTHER C** →
>**B**(A)**55** and type **URRENT** →
>**C**(A)**55** and type **LIAB.** →
>**D**(B)**55** and type **20000** R

ROW 57 **Total current liabilities** is the total of all current liabilities listed on the balance sheet.

To enter

a label to identify total current liabilities
a formula that will calculate the sum of all current liabilities

Type >**A57** and type **TOT.CRN** →
>**B**(A)**57** and type **"T.LIAB** →
>**C**(A)**57** and type **ILITIES** →
>**D**(B)**57** and type **@SUM(D**(B)**51.D**(B)**56)** R

Result The figure **60000** should appear in cell D(B)57.

ROW 59 **Long-term debt** (also called *fixed liabilities* or *bonds*) includes debts or loans not due within the year.

To enter

a label to identify long-term debt
a value of $40,000

Type >**A59** and type **LONG TE** →
>**B**(A)**59** and type **RM DEBT** → →
>**D**(B)**59** and type **40000** R

ROW 61 **Total liabilities** is the sum of total current liabilities and long-term debt of the firm.

To enter

a label to identify total liabilities
a formula that will calculate the sum of current liabilities and long-term debt

Type >**A61** and type **TOTAL L** →
>**B**(A)**61** and type **IABILIT** →
>**C**(A)**61** and type **IES** →
>**D**(B)**61** and type **+D**(B)**59+D**(B)**57** R

Result The figure **100000** should appear in cell D(B)61.

ROW 63 **Owner equity** (or *net worth*, *shareholder equity*) has two parts: the actual investment of the owner(s) in the firm, and retained earnings (any profits that are left to accumulate in the business or, in some cases, the losses). It is equal to the assets of a business minus its liabilities.

Owner equity will be recorded differently on a balance sheet according to the legal structure of a business. If the business is incorporated, its books will show capital stock accounts under owner equity. These accounts represent the total paid-in value of the shares issued to the owners of the business. Undistributed profits are recorded in a retained earnings account. If the business is a proprietorship (single owner) or a partnership, the heading under owner equity would read *capital* or *net worth*, and the capital accounts would appear under the name or names of the owner(s). Increases in equity as a result of undistributed earnings are also recorded there (as retained earnings), as are decreases in equity if the business shows a loss instead of a profit.

Note: In a going business, *tangible net worth* excludes asset items, such as goodwill, trademarks, patents, copyrights, leasehold improvements, organizational expenses, or underwriting discounts and expenses, which frequently have a great but undetermined value. They would be listed under "Other assets" in our example. Until these intangibles are actually liquidated by sale or fully amortized, it is difficult for an analyst to evaluate what they might bring. In some cases, they have no commercial value except to those who hold them; an example would be an item of goodwill. Intangible assets are amortized (decrease in value) over time in the same basic way that fixed assets are depreciated. To a profitable business up for sale, the goodwill conceivably could represent the potential earning power over a period of years, and could actually bring more than the assets themselves. On the other hand, another business might find itself unable to realize anything at all on goodwill. Since the real value of intangible assets is frequently difficult to determine and evaluate, intangibles are customarily given little consideration in financial statement analysis. Many analysts will deduct the value of intangibles from total owner equity and use the tangible net worth in their evaluation of a company.

To enter

a label to identify owner equity

Type >**A63** and type **"<OWNER** →
>**B**(A)**63** and type **EQUITY>** R

ROW 64 **Common stock** is equal to the total amount in money or value of services that stockholders have provided directly to the firm (also called *paid-in capital* or *common equity*). If the stock was issued with a par value (that is, a dollar value that appears on the stock certificate), the common stock account may have two subaccounts. *Common stock* is the number of shares issued times the par value. *Paid-in capital* is the monetary difference between what the firm received for the stock and the common stock at par value. By law, paid-in capital must always be positive on the balance sheet.

To enter

a label to identify common stock
a value of $60,000

Type >**A64** and type **COMMON** →
>**B**(A)**64** and type **STOCK** →→
>**D**(B)**64** and type **60000** R

ROW 65 **Retained earnings** is the accumulated amount of undistributed earnings of the company. Each year or accounting period, net profit, less any dividends paid, is added to the retained earnings account. If a company has a loss for the period, the amount of the loss is subtracted from the retained earnings account. If a company has a profit, that amount is added. Thus the retained earnings account is the link between the balance sheet of the previous period and the balance sheet of the current one. It is also the link between the income statement and the balance sheet.

To enter

a label to identify retained earnings
a value of $70,000

Type >**A65** and type **RETAINE** →
>**B**(A)**65** and type **D EARNI** →
>**C**(A)**65** and type **NGS** →
>**D**(B)**65** and type **70000** R

ROW 67 **Total owner equity** is the total amount of money invested in the firm by various owners plus the amount earned by the firm. It is also called *total net worth* or just *net worth*. In our example, total owner equity is composed of common stock and retained earnings.

To enter

a label to identify total owner equity
a formula that will calculate the sum of all owner equity accounts

Type >**A67** and type **TOTAL O** →
>**B**(A)**67** and type **WNER EQ** →
>**C**(A)**67** and type **UITY**→
>**D**(B)**67** and type **@SUM(D**(B)**62.D**(B)**66)** R

Result The figure 130000 should appear in cell D(B)67.

ROW 69 **Total liabilities and equity** is the sum of all liabilities plus owner equity. It equals total assets, and therefore the balance sheet "balances."

To enter

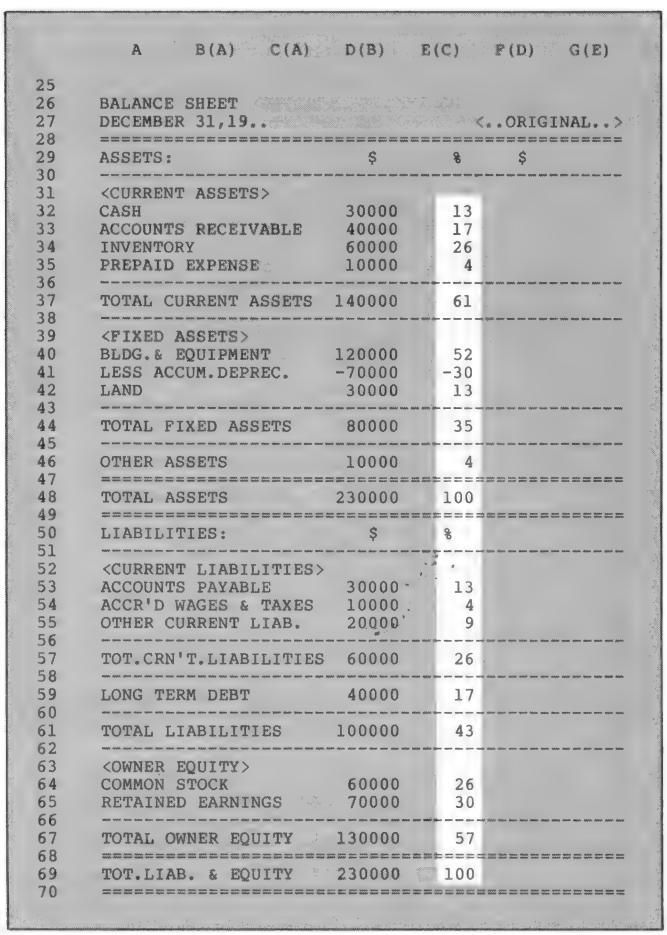
a label to identify total liabilities and equity
a formula that will calculate the sum of total liabilities and owner equity

Type >**A69** and type **TOT.LIA** →
>**B**(A)**69** and type **B. & EQ** →
>**C**(A)**69** and type **UITY** →
>**D**(B)**69** and type **+D**(B)**61+D**(B)**67** R

Result The figure 230000 should appear in cell D(B)69. You have now built a complete balance sheet on the computer.

Step Three

Create a common-sized balance sheet. A common-sized balance sheet shows each item (assets, liabilities, and equity) on the balance sheet as a percentage of total assets. The computer (and the VisiCalc program) can quickly convert (using a formula which you enter) a "regular" balance sheet into a common-sized one. You will now enter a series of formulas into column E(C) that will calculate the percentages. It will also automatically recalculate the percentages whenever numbers in column D(B) are changed.



	A	B(A)	C(A)	D(B)	E(C)	F(D)	G(E)
25							
26	BALANCE SHEET						
27	DECEMBER 31,19..				<..ORIGINAL..>		
28	==========				==========		
29	ASSETS:			$	%	$	
30	----------				----------		
31	<CURRENT ASSETS>						
32	CASH			30000	13		
33	ACCOUNTS RECEIVABLE			40000	17		
34	INVENTORY			60000	26		
35	PREPAID EXPENSE			10000	4		
36	----------				----------		
37	TOTAL CURRENT ASSETS			140000	61		
38	----------				----------		
39	<FIXED ASSETS>						
40	BLDG.& EQUIPMENT			120000	52		
41	LESS ACCUM.DEPREC.			-70000	-30		
42	LAND			30000	13		
43	----------				----------		
44	TOTAL FIXED ASSETS			80000	35		
45	----------				----------		
46	OTHER ASSETS			10000	4		
47	==========				==========		
48	TOTAL ASSETS			230000	100		
49	==========				==========		
50	LIABILITIES:			$	%		
51	----------				----------		
52	<CURRENT LIABILITIES>						
53	ACCOUNTS PAYABLE			30000	13		
54	ACCR'D WAGES & TAXES			10000	4		
55	OTHER CURRENT LIAB.			20000	9		
56	----------				----------		
57	TOT.CRN'T.LIABILITIES			60000	26		
58	----------				----------		
59	LONG TERM DEBT			40000	17		
60	----------				----------		
61	TOTAL LIABILITIES			100000	43		
62	----------				----------		
63	<OWNER EQUITY>						
64	COMMON STOCK			60000	26		
65	RETAINED EARNINGS			70000	30		
66	----------				----------		
67	TOTAL OWNER EQUITY			130000	57		
68	==========				==========		
69	TOT.LIAB. & EQUITY			230000	100		
70	==========				==========		

COLUMN E **Common-sized balance sheet** percentages show all balance sheet items as percentages of total assets, in the same way that common-sized income statements list items as percentages of net sales. The VisiCalc program can calculate these percentages and recalculate them whenever changes are made in column D(B). One of two methods may be used, depending upon how experienced you are with the VisiCalc program. You can proceed slowly and surely, following the step-by-step instructions below or, if you're more experienced, you can just enter the formula and replicate it. (We discussed how to enter percentages (operating ratios) for the income statement on page 32.)

To calculate the percentages, you first enter the formula to divide cash (cell E(C)32) by total assets (cell E(C)48), then multiply the result by 100 to eliminate the decimal so that percentages appear on the screen as whole numbers, i.e., 10, 20, 30, etc., rather than .10, .20, .30. The formula is then replicated down the rest of the example, and divides each line item by total assets to obtain operating ratios for these items.

If you are using the Advanced Version, you can use the **/AV%** command instead of multiplying by 100. If you use this command, ignore the first formula given below for cell E(C)32 since it has been designed for use with the VisiCalc regular version program, which doesn't automatically multiply the result of the equation by 100. Go directly to the "[AV] To enter" instructions and enter those.

The next step is to replicate this formula to all other entries on the balance sheet, using the commands **N(N = NO CHANGE)** (so all of the items will be divided by the total assets), **R(R = RELATIVE)** (so the item to be divided will change).

To enter

a formula in cell E(C)32 that will divide cash in column D(B), by total assets in the same column, and then replicate the formula

Type >**E**(C)**32** and type **100*(D**(B)**32/D**(B)**48)** [R]

[AV] **To enter**

Type >**C32** and type **/AV%** [R] [R] **+B32/B48** [R]

To replicate

from one cell to another

Type >**E**(C)**32** and type **/R** [R] **E**(C)**37** [R]
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

>**E**(C)**32** and type **/R** [R] **E**(C)**44** [R]
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

>**E**(C)**32** and type **/R** [R] **E**(C)**46** [R]
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

>**E**(C)**32** and type /**R** (R) **E**(C)**48** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

>**E**(C)**32** and type /**R** (R) **E**(C)**57** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

>**E**(C)**32** and type /**R** (R) **E**(C)**59** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

>**E**(C)**32** and type /**R** (R) **E**(C)**61** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

>**E**(C)**32** and type /**R** (R) **E**(C)**67** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

>**E**(C)**32** and type /**R** (R) **E**(C)**69** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

from one cell to a range

Type >**E**(C)**32** and type /**R** (R) **E**(C)**33.E**(C)**35** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

>**E**(C)**32** and type /**R** (R) **E**(C)**40.E**(C)**42** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

>**E**(C)**32** and type /**R** (R) **E**(C)**53.E**(C)**55** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

>**E**(C)**32** and type /**R** (R) **E**(C)**64.E**(C)**65** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **RN**

Result If the formula was entered and replicated correctly, your screen should now look like the illustration on page 57, with each line item value in column D(B) shown in column E(C) as a percentage of total assets. If your screen doesn't match, see "Troubleshooting Example.1" on page 162.

Step Four

Transfer data to the <ORIGINAL> columns. The <ORIGINAL> columns, F(D) and G(E), used for comparison purposes, are copied from column D(B) and E(C) using the DIF command.

	A	B(A)	C(A)	D(B)	E(C)	F(D)	G(E)
25							
26	BALANCE SHEET						
27	DECEMBER 31,19..					<..ORIGINAL..>	
28	==========	==========	==========	==========	==========	==========	==========
29	ASSETS:			$	%	$	%
30	----------	----------	----------	----------	----------	----------	----------
31	<CURRENT ASSETS>						
32	CASH			30000	13	30000	13
33	ACCOUNTS RECEIVABLE			40000	17	40000	17
34	INVENTORY			60000	26	60000	26
35	PREPAID EXPENSE			10000	4	10000	4
36	----------	----------	----------	----------	----------	----------	----------
37	TOTAL CURRENT ASSETS			140000	61	140000	61
38	----------	----------	----------	----------	----------	----------	----------
39	<FIXED ASSETS>						
40	BLDG.& EQUIPMENT			120000	52	120000	52
41	LESS ACCUM.DEPREC.			-70000	-30	-70000	-30
42	LAND			30000	13	30000	13
43	----------	----------	----------	----------	----------	----------	----------
44	TOTAL FIXED ASSETS			80000	35	80000	35
45	----------	----------	----------	----------	----------	----------	----------
46	OTHER ASSETS			10000	4	10000	4
47	==========	==========	==========	==========	==========	==========	==========
48	TOTAL ASSETS			230000	100	230000	100
49	==========	==========	==========	==========	==========	==========	==========
50	LIABILITIES:			$	%	$	%
51	----------	----------	----------	----------	----------	----------	----------
52	<CURRENT LIABILITIES>						
53	ACCOUNTS PAYABLE			30000	13	30000	13
54	ACCR'D WAGES & TAXES			10000	4	10000	4
55	OTHER CURRENT LIAB.			20000	9	20000	9
56	----------	----------	----------	----------	----------	----------	----------
57	TOT.CRN'T.LIABILITIES			60000	26	60000	26
58	----------	----------	----------	----------	----------	----------	----------
59	LONG TERM DEBT			40000	17	40000	17
60	----------	----------	----------	----------	----------	----------	----------
61	TOTAL LIABILITIES			100000	43	100000	43
62	----------	----------	----------	----------	----------	----------	----------
63	<OWNER EQUITY>						
64	COMMON STOCK			60000	26	60000	26
65	RETAINED EARNINGS			70000	30	70000	30
66	----------	----------	----------	----------	----------	----------	----------
67	TOTAL OWNER EQUITY			130000	57	130000	57
68	==========	==========	==========	==========	==========	==========	==========
69	TOT.LIAB. & EQUITY			230000	100	230000	100
70	==========	==========	==========	==========	==========	==========	==========

COLUMNS F(D) and G(E) **Using the DIF (disk interchange format) command to save a file** is done the same way here as in Chapter 3. The DIF will transfer the values in columns D(B) and E(C) of the balance sheet to columns F(D) and G(E), the <ORIGINAL> columns. When you are working with the "What If" in the next section, you can use these columns to compare your results with the original example.

To save the file using the DIF

Type >**D**(B)**29** and type /**S#**
The prompt line will read DATA: SAVE LOAD
Type **S** (for save)
The prompt line will read DATA SAVE: FILE FOR SAVING

Type **DIF2** (R)
The prompt line will now read DATA SAVE: LOWER RIGHT

With the cursor in cell D(B)70, the cell contents line reveals the hidden instructions entered on page 51, and reads DIF2 LOWER RIGHT E(C)70

Type **E(C)70** (R)
The prompt line will now read DATA SAVE: R, C OR RETURN
Type (R)

Result The rectangular area of the balance sheet consisting of columns D(B) and E(C) from row 29 to row 70 is now saved on the diskette under the file name DIF2.

.....

COLUMNS F(D) and G(E) **Using the DIF command to load a file** will complete this step. Now that you have saved the values to the diskette, you can reload them in the <ORIGINAL> columns.

To use the DIF command to load the file

Type **>F(D)29** and type **/S#**

The prompt line will read DATA: SAVE LOAD
Type **L** (for load)

The prompt line will now read DATA LOAD: FILE TO LOAD

Use the (→) key to scroll through the file index until you see DIF2 on the edit line
Type (R)

The prompt line will now read DATA LOAD: R, C OR RETURN
Type (R)

Result The disk drive will spin, and the rectangular area of the balance sheet between columns D(B) and E(C), rows 29 to 70, is loaded into the area between columns F(D) and G(E) on the same rows. Unlike the columns they were transferred from, these two columns don't have formulas in them, only numbers. Therefore, the computer won't calculate changes in these columns, but since they are for comparison purposes, this is what we want.

Step Five

Formatting, protecting, and saving

Formatting the balance sheet If you are using the VisiCalc Advanced Version program you can format a worksheet after it has been finished. This allows you to experiment with a number of different formats without having to replicate formulas and data as you would with VisiCalc. In this example we are going to format all numbers so they have commas separating thousands and negative numbers appear in parentheses.

[AV] **To format**
the balance sheet

Type **>B32** and type **/AV,(** (R) (R)

To replicate
from one cell to a range

Type **>B32** and type **/R**
The prompt line will read
Replicate: (, Source Range or RETURN
Type **(**
The prompt line will read Replicate:Limit: ACNR)
Type **A)** (R) **B33.B69** (R)

from one range to another range

Type **>B32** and type **/R**
The prompt line will read
Replicate: (, Source Range or RETURN
Type **(**
The prompt line will read Replicate:Limit: ACNR)
Type **A).B69** (R) **D32** (R)

Result The two dollar columns of the balance sheet, B and D, will now be formatted. All dollar values should appear with commas separating thousands and negative numbers should be in parentheses.

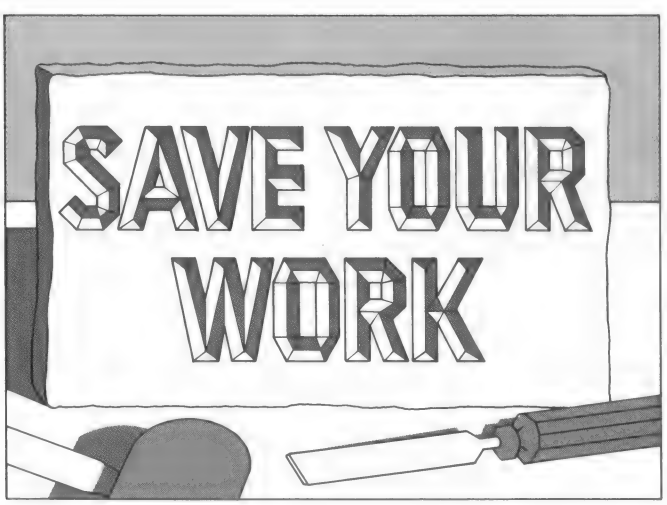
Protecting the balance sheet If you are using the Advanced Version you can protect all of the cells in the balance sheet so they aren't inadvertently overwritten or erased. Since no data will be entered into the label or <ORIGINAL> columns of the balance sheet, it is suggested that you protect them.

AV To protect
the balance sheet

Type **>A26** and type **/AMP** (R) (R)
Type **/R**
The prompt line will read Replicate: (, Source Range or RETURN
Type **(**
The prompt line will read Replicate:Limit: ACNR)
Type **A)**(R) **A27.A70** (R)

>A26 and type **/R**
The prompt line will read Replicate: (, Source Range or RETURN
Type **(**
The prompt line will read Replicate:Limit: ACNR)
Type **A).A70** (R) **C70.E70** (R)

Result All columns of the balance sheet, other than column B where changes will be entered, are now protected. To check that they are go to any cell and try entering a value, label, or formula. The new entry shouldn't be accepted and you should get a message telling you the cell is protected.



Save your work. Again, it's advisable to save your work before you proceed to the "What If" section. Here is a brief summary of how to save (for detailed instructions see pages 32–33).

1 If you have already saved Example.1 to a diskette, insert that same diskette into drive #1. If you do not already have an initialized diskette, you will have to initialize one before the example can be saved. This can be done directly with the VisiCalc program, without affecting the worksheet in memory and on the screen.

2 Move the cursor to the upper left corner of the worksheet by typing **>A1** (R).

3 To save a file onto the diskette, type **/SS.** If this is the first time the example has been saved, type **EXAMPLE.1.VC**, then type (R). If the title has already been saved once, use the (→) key to scroll through the disk catalog until the file EXAMPLE.1.VC appears on the edit line, then type (R). Be sure to pause and make sure this is the file name you want to use for saving the worksheet, then type **Y.**

VISICALC TIPS Reducing precision

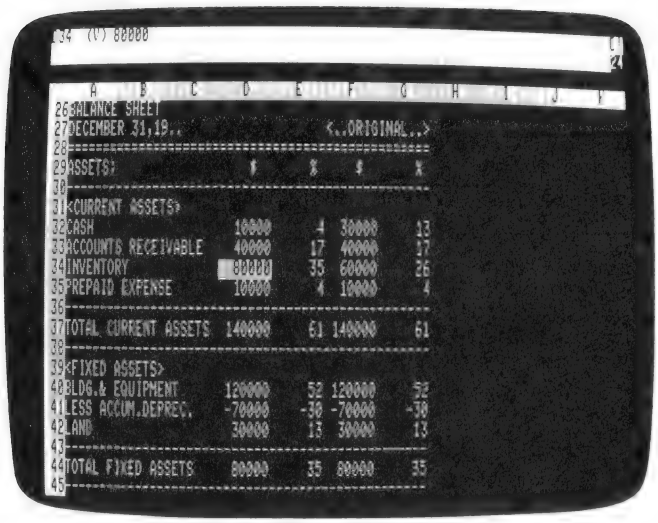
For some kinds of financial analysis, the VisiCalc and VisiCalc Advanced Version programs can be too precise. They carry calculated values (those determined by formulas) out to 11 or 12 decimal places. When interest is calculated, this precision can cause a lot of little errors (at least in accounting terms) that add up to big errors.

You can reduce the VisiCalc program's precision to the standard two decimal places (dollars and cents) used in accounting. Just type **(@INT(** (the coordinate of the first cell containing the formula) ***100 + .5))/100**

VisiCalc Advanced Version's precision is reduced to two (or any other number of) decimal places with the **@ROUND** command. Just type **@ROUND** (value you want rounded, **2**). If you wanted to round to three places, the last number would be 3 and so on, up to 11 places.

Exploring "What Ifs"

You can explore many "What If" questions using the computer and the sample balance sheet. We've selected one to illustrate how it could be done, and the value of using the balance sheet as a working document.



WHAT IF 1 **You buy inventory at a "bargain price."** You are offered a great opportunity. One of your major suppliers is overstocked in an inventory item that you use on a regular and predictable basis. They have offered you a full year's supply at 50% off the normal price to you. The "deal" will cost $20,000, a saving of $20,000. On the face of it, the deal looks very attractive. The lower inventory cost will reduce your cost of goods when the item is sold, and as a result your gross margin will rise. You have $30,000 in cash on hand, and the question is, "Can I afford to accept the offer?" Let's take a look at how doing so will affect your balance sheet if you have to pay the supplier within 30 days to close the deal.

To restore

the example (from the last "What If" in Chapter 3)

Type >**D**(B)**7** and type **300000** (R)
>**D**(B)**13** and type **20000** (R)
>**D**(B)**17** and type **5000** (R)
>**E**(C)**23** and type **/FD** (R)

To enter

a change in recalculation from manual to automatic
changes decreasing cash from $30,000 to $10,000 and increasing inventory from $60,000 to $80,000

Type **/GRA**
>**D**(B)**32** and type **10000** (R)
>**D**(B)**34** and type **80000** (R)

Result Cash drops to $10,000, or 4% of total assets. Inventory increases to $80,000, or 35% of total assets.

ANALYSIS A cash balance equal to 4% of total assets is a very small balance. Liquidity is seriously reduced. If anything unexpected were to happen, you might not have the resources to meet your obligations, regardless of the long range prospects derived from the special price. Many companies and banks look closely at the cash on hand as a percentage of total obligations. In this case, it might be prudent to discuss the opportunity with your bank, and borrow sufficient funds to finance the deal rather than put your firm in a precarious financial position.

Summary: The balance sheet

You now have a sample common-sized balance sheet built on the computer. Let's take a quick look at it: What does the statement say about the financial condition of this sample company? How might other people view it and why?

The common-sized balance sheet can provide valuable information about the condition of your business. You and others will be concerned with the picture it portrays. The balance sheet balances assets and liabilities and total equity. Beyond that it depicts the relative balance among asset accounts and liability and equity items. These relationships differ from industry to industry.

In the example you built, the short-term or current assets account for 61% of total assets while long-term assets (net fixed assets plus other assets) make up 39% of total assets. If this balance is considered normal for your line of business and there is significant deviation (such as 50% current assets vs. 50% long-term assets), then there may be problems. It may be that the long-term assets are appropriate in dollar terms to support your current level of sales. But at this level of sales, current assets are too low for the sales level.

But now we have introduced the idea of comparing balance sheet data with income statement information. Combining the information from both financial statements often produces more useful information for analysis and decision making purposes. That is the subject of Chapter 5, "Using Ratios to Measure Condition and Performance."

APPLE TIPS Protecting important files on a disk

After all of the time spent building templates, it can be very depressing to lose one. One of the problems with the VisiCalc program is that it will store a file on top of another file. It's unfortunately very easy to load a blank template, fill it in, and then store it back under the file name of the blank master or another file, thus losing that file. You should exercise due care when saving, and could write-protect entire diskettes, but there is another way to protect your work. On the Apple II Plus (and Apple IIe), this additional protective method is called *locking* a file; on the Apple III it is called *setting write-protection*. You need either your DOS System Master Diskette (for the Apple II and IIe), or your SOS Utilities Diskette (for the Apple III). These are the steps.

To lock a file on the Apple II Plus and Apple IIe:

Step 1. Load your DOS System Master Diskette by inserting it into drive #1 and turning on the computer. The screen will display LOADING INTEGER INTO LANGUAGE CARD.

Step 2. When the drive stops and the cursor begins flashing, remove the System Master Diskette and insert the diskette with the file(s) you want to protect. Type **CATALOG** (R).

Step 3. The screen will display a catalog of the files on the disk. Type **LOCK** (name of file you want to protect) (R)

Result: The file you entered should now be locked. To be sure that it is: Type **CATALOG** (R)

The catalog will be redisplayed, but this time the file you protected will be preceded by an * to indicate that it's locked.

If you try to change or erase this file, you will now get the message FILE LOCKED on the VisiCalc edit line. To change the file, you will have to first unlock it. To do so, follow steps 1 and 2 above, but then, in step 3, type **UNLOCK** (name of file you want to change) (R).

To set write-protection on the Apple III:

Step 1. Load the Utilities Diskette. When the main menu appears on the screen, type **F** to get the file-handling-commands menu.

Step 2. A menu will appear on the screen with a number of options. Type **W** to select write-protection.

Step 3. The screen will change and you will be asked to write-protect the files:

Step 4. Type in the file name and press (R) followed by a **Y** to set the write-protection, or lock the file.

Result: The file should now be protected. To change the file, you'll have to unprotect it. To do this, follow steps 1 through 3 above. Then, in step 4, type (the file name) (R) and then **N**.

5 Using ratios to measure condition and performance

Introduction: The revealing ratios

What do ratios reveal about a company's condition or performance? A lot. Used correctly, ratios function like financial investigative reporters, uncovering the real story or "scoop" on a company. They dig deeper than the information provided on a balance sheet or income statement. For example, look at the following income statement on Acme Industries. Would you say that the company is performing well, that Acme is in good shape?

Acme Industries (fictitious company)

Income statement for year ending 12/31/83

Net sales	$1,500,000
Cost of goods sold	750,000
Gross profit	750,000
Operating costs	150,000
Income before taxes	600,000
Taxes (40%)	240,000
Net income	$ 360,000

As measured by profits, the company's performance is good. Net income looks all right, given the level of net sales. But actually, Acme is on the verge of bankruptcy. The company has excessive debts that must be paid soon, and it doesn't have sufficient cash or liquid assets available to pay those debts. A lot of income had been invested in assets to support company growth, and present cash balance is barely sufficient to take care of upcoming operating needs. A ratio — cash flow to current portion of long-term debt — might reveal the problem. If the manager of Acme had been tracking this ratio and some others, it's possible that the problem could have been prevented. Acme, although it appears profitable, is not in good shape.

Why, you might ask, didn't the balance sheet show the problem? The balance sheet does show assets, liabilities, and equity, and its operating ratios show all line items as percentages of total assets or of total liabilities plus equity. But, in Acme's situation, the long-term debt was on the balance sheet for a number of years, so the operating ratios of long-term debt to total liabilities plus equity actually declined as the firm grew. Management interpreted the decline as a good sign. The income statement and balance sheet indicated a well-managed firm. But the ratio, cash flow to current portion of long-term debt, which draws information from both the balance sheet and the income statement, shows a different and risky situation.

Different ratios uncover different facts or tell diverse stories. Therefore, to get the story you want, you have to use the right ratio. In the Acme example, the inventory turnover ratio would not be helpful in identifying the complete extent of the problem. There are numerous ratios that can be constructed. They are helpful only when they are properly and selectively used. Before calculating a ratio, always ask, "What do I want or need to know about my company?" Then select the ratio that gives you the answer. The question clarifies your reason for evaluating the firm. Without that focus, you might use the wrong ratio to uncover the wrong information, certainly a waste of time.

There are three primary reasons for using ratios:

- **To monitor condition and performance** Ratios help managers keep abreast of what's really going on in their businesses. Tracking a half-dozen or so ratios, on a regular basis, helps managers monitor company performance. Ratios force you to think about where profits come from, what you do with your money (where it's invested), and whether you have a sufficient cash flow on a regular basis.

- **To set management goals** Ratios can be used by managers to set meaningful and realistic goals for their companies. For instance, if the manager of Acme survives the cash crisis, he or she could set the following ratio goals: to maintain a current ratio of 3:1, a debt to equity ratio of 1:1, and a return on assets of 10%. (If these goals sound unintelligible to you now, they'll sound like understandable English when you finish this chapter.)

- **To communicate with others** Ratios are part of the language of business. Lenders, creditors, and investors may all ask about your company's ratios as a means of evaluating your company. Since these people aren't with you every day, they need some financial yardstick to gauge your company's progress and prospects. Part of that yardstick is likely to be your ratios. Furthermore, these people have particular questions based upon their own perspectives and their interest in your company. And different questions call for different ratio answers. You, as the manager, have to respond to all of them. A firm grasp of ratios — what they are and what they can do — can help you communicate effectively with others in business.

Together, these three reasons add up to one more reason for using ratios: to help control your company. When you set target ratio goals, you can track the ratios over time to assess progress toward achieving the goals. If a ratio is off-track, you regain control by taking the actions necessary to bring the ratio back into line. Although ratios don't provide automatic solutions to financial problems, they are useful tools for measuring and controlling the performance of your company. How you use them determines their real value.

Financial ratios are the tools examined in this chapter. Operating ratios are a subset of financial ratios. You've already calculated operating ratios on the income statement and balance sheet in Chapters 3 and 4. Other financial ratios compare line items with other line items on the balance sheet, income statement, or both. Because financial ratios show the specific relationship between line items, they can answer a whole new range of business questions for you.

Financial ratios are often grouped into ratio families according to the information they reveal, as shown in the table at right. Each family has a character of its own, with primary questions that it answers. The individual ratios within a family approach the basic question(s) from slightly different perspectives. The liquidity family, for example, includes two ratios: the current and the quick. Both answer the question, "Can I pay my bills?" We'll examine four families of ratios: liquidity, asset management, safety/leverage, and profitability. Under each family, we've included important and characteristic ratios. The ratio list is not exhaustive, but it is a very useful sample.

An overview of the ratio families is given first, and then a detailed explanation of the individual ratios is provided in the "What If" section of this chapter. You'll build the ratio template on the computer first, and then explore the individual ratios and their meanings through "What If" questions.

Abraham Lincoln once said, "Better to remain silent and be thought a fool than to speak out and remove all doubt." Too many managers remain silent while bankers or others discuss ratios. These managers are afraid that they'll sound foolish discussing a subject they don't understand. If you've been silent about ratios, this chapter should put an end to your silence. As the ratios are described and explored, you'll see that they aren't complicated, and that you can use them to your advantage.

The revealing ratios

Questions answered	Family of ratios	Ratio	Measure: Condition or performance
Can the company pay its bills?	Liquidity	Current ratio	Condition
		Quick ratio	Condition
How efficiently and productively is the company employing its assets?	Asset management	Average collection period	Performance
		Inventory turnover	Performance
How risky is the business?	Safety/ Leverage	Debt to equity	Condition
		Times interest earned	Performance
Can it cover debts? Can it withstand adversity?		Cash flow/ current portion of long-term debt	Performance
Is the company making enough money?	Profit-ability	Profit margin	Performance
		Return on assets	Performance
Is the owner's return satisfactory?		Return on equity	Performance

Getting ready

To get ready to examine ratios, reload or restore your example. This step was explained fully in Chapters 3 and 4. If you need to review the instructions on how to reload, see page 48.

Entering the example

The next step is to build the ratio template on your computer. You'll enter the ratios by families, starting with the liquidity group. Each ratio is only briefly defined in this section, so that you can quickly build the template. In the ratio sections that follow, the family and individual ratios are explained in detail.

Step One

Enter headings, ratio family labels, and ruled lines

```
        A     B(A)   C(A)   D(B)   E(C)   F(D)   G(E)
71
72      ================================================
73      RATIOS:                                <..ORIGINAL..>
74      ------------------------------------------------
75      <LIQUIDITY>
76
77
78
79
80      <ASSET MANAGEMENT>
81
82
83
84
85      <SAFETY/LEVERAGE>
86
87
88
89
90
91      <PROFITABILITY>
92
93
94
95
96      ================================================
```

ROWS 72–96 **Headings and ruled lines for the ratio section of the example** are the first entry.

To enter

a label to identify this as the ratio section of the example
labels to identify the ratio families and the <ORIGINAL> column
a single ruled line from column A to column G(E) on row 74
double ruled lines from column A to column G(E) on rows 72 and 96

Type >**A72** and type "= = = = = = = (R) (quotation mark followed by 7 equals signs), or, if using the Advanced Version, type "= (R) (quotation mark followed by 21 equals signs).

>**A73** and type **RATIOS:** (R)
>**F**(D)**73** and type "<**..ORIG** (→)
>**G**(E)**73** and type **INAL..>**(R)

>**A74** and type "-------(R) (quotation mark followed by 7 minus signs), or, if using the Advanced Version, type "--------------------(R) (quotation mark followed by 21 minus signs).

>**A75** and type "<**LIQUID** (→)
>**B**(A)**75** and type **ITY>** (R)

>**A80** and type "<**ASSET** (→)
>**B**(A)**80** and type **MANAGEM** (→)
>**C**(A)**80** and type **ENT>** (R)

>**A85** and type "<**SAFETY** (→)
>**B**(A)**85** and type "**/LEVERA** (→)
>**C**(A)**85** and type **GE>** (R)

>**A91** and type "<**PROFIT** (→)
>**B**(C)**91** and type **ABILITY** (→)
>**C**(C)**91** and type "> (R)

To replicate

from one cell to a range

Type >**A72** and type **/R** (R) **B72.G**(E)**72** (R)
>**A72** and type **/R** (R) **A96.G**(E)**96** (R)
>**A74** and type **/R** (R) **B74.G**(E)**74** (R)

Result A double ruled line should extend from column A to column G(E) on rows 72 and 96, and a single ruled line should extend across the same range on row 74; labels appear for the ratio families.

Step Two

Enter ratio labels, formulas, and values

```
        A     B(A)   C(A)   D(B)   E(C)   F(D)   G(E)

72      ================================================
73      RATIOS:                                <..ORIGINAL..>
74      ------------------------------------------------
75      <LIQUIDITY>
76
77      CURRENT RATIO              2.33 TO 1      2.33 TO 1
78      QUICK RATIO                1.17 TO 1      1.17 TO 1
79
80      <ASSET MANAGEMENT>
81
82      AVG. COLLECT.PERIOD          49 DAYS        49 DAYS
83      INVENTORY TURNOVER         3.00 TIMES     3.00 TIMES
84
85      <SAFETY/LEVERAGE>
86
87      DEBT TO WORTH              0.77 TO 1      0.77 TO 1
88      TIMES INTEREST EARNED      9.20 TIMES     9.20 TIMES
89      CF TO CRN'T POR. LTD.      3.90 TIMES     3.90 TIMES
90
91      <PROFITABILITY>
92
93      PRF'T MARGIN ON SALES      13.33 %        13.33 %
94      RETRN.ON TOTAL ASSETS      17.39 %        17.39 %
95      RETURN ON EQUITY           30.77 %        30.77 %
96      ================================================
```

ROW 77 **The current ratio** formula divides current assets by current liabilities. Any change entered in line items of current assets or current liabilities will instantly be reflected in a changed current ratio.

If you have proceeded directly to this chapter from the "What Ifs" in Chapter 4, you will have to restore the balance sheet to its original form so your results match those given in the following instructions.

To restore

the example

Type >**D**(B)**32** and type **30000** (R)
>**D**(B)**34** and type **60000** (R)

To enter

a local format that shows the ratio displayed out to two decimal places
a label to identify the current ratio row and to show that the ratio is always a relationship of a number to one (1 TO 1, 2 TO 1, etc.)
a value of 2.33 in cell F(D)77 which won't change, but which will be used to compare with changes in cell D(B)77
a formula in cell D(B)77 that will divide current assets on the balance sheet above by current liabilities

Type >**A77** and type **CURRENT** (→)
>**B**(A)**77** and type **"(S)RATIO** (→)(→)
>**D**(B)**77** and type **/F$ + D**(B)**37/D**(B)**57** (→)
>**E**(C)**77** and type **"(S)TO 1** (→)
>**F**(D)**77** and type **/F$ 2.33** (→)
>**G**(E)**77** and type **"(S)TO 1** (R)

Result The value 2.33 should appear in cell D(B)77; the current ratio in the first column and in the <ORIGINAL> column should read 2.33 TO 1.

ROW 78 **The quick ratio** formula divides the sum of cash, marketable securities (not shown on our simplified balance sheet), and accounts receivable by current liabilities. A change in any of these items will instantly be reflected in a changed quick ratio.

To enter

a local format that will show the ratio displayed out to two decimal places
a label to identify row 78 as the quick ratio row and to show that the ratio is always a relationship of a number to one (1 TO 1, 2 TO 1, etc.)
a value of 1.17 in cell F(D)78 that won't change, but which will be used to compare with changes in cell D(B)78
a formula in cell D(B)78 that will divide cash and accounts receivable on the balance sheet above by current liabilities

Type >**A78** and type **QUICK R** (→)
>**B**(A)**78** and type **ATIO** (→)(→)
>**D**(B)**78** and type **/F$ + D**(B)**32 + D**(B)**33/D**(B)**57** (→)
>**E**(C)**78** and type **"(S)TO 1** (→)
>**F**(D)**78** and type **/F$ 1.17** (→)
>**G**(E)**78** and type **"(S)TO 1** (R)

Result The value 1.17 should appear in cell D(B)78; the quick ratio in both columns should read 1.17 TO 1.

ROW 82 **The average collection period** formula divides accounts receivable by daily sales. To calculate daily sales, annual sales are divided by 365. A change in sales or accounts receivable will instantly be reflected in a changed ratio.

To enter

a label to identify row 82 as the average collection period ratio row, and to show that the ratio is expressed in days, i.e., 48 days, 45 days, etc.
a value of 49 in cell F(D)82 which won't change, but which will be used to compare with changes in cell D(B)82
a formula in cell D(B)82 that will divide accounts receivable by daily sales (net sales is divided by 365)

Type >**A82** and type **AVG. CO** (→)
>**B**(A)**82** and type **LLECT.P** (→)
>**C**(A)**82** and type **ERIOD** (→)
>**D**(B)**82** and type **+ D**(B)**33/(D**(B)**7/365)** (→)
>**E**(C)**82** and type **"(S)DAYS** (→)
>**F**(D)**82** and type **49** (→)
>**G**(E)**82** and type **"(S)DAYS** (R)

Result The value 49 should appear in cell D(B)82; average collection period ratio in both columns should read 49 DAYS.

ROW 83 **Inventory turnover** is calculated by dividing cost of goods sold by the inventory on hand. A change in cost of goods or inventory will instantly be reflected in a changed ratio.

To enter

a format that will show the inventory turnover ratio displayed out to two decimal places
a label to identify row 83 as the inventory turnover ratio row and to show that the ratio is expressed in *times* (that the inventory turns over annually — 3 times, 4 times, etc.)
a value of 3.00 in cell F(D)83
a formula in cell D(B)83 that will divide cost of goods sold by inventory

Type **>A83** and type **INVENTO** →
>B(A)**83** and type **RY TURN** →
>C(A)**83** and type **OVER** →
>D(B)**83** and type **/F$ + D**(B)**9/D**(B)**34** →
>E(C)**83** and type **"(S)TIMES** →
>F(D)**83** and type **/F$ 3** →
>G(E)**83** and type **"(S)TIMES** R

Result The value 3.00 should appear in cell D(B)83; the inventory turnover ratio in both columns should read **3.00 TIMES**. If you don't get that result, first check to see that the formula in cell D(B)83 has been entered correctly. If you need further help, see "Troubleshooting Example.1."

ROW 87 **The debt to worth ratio** divides the firm's total liabilities (current liabilities plus long-term debt) by the firm's total net worth (total owner equity). A change in any item contributing to either total liabilities or owner equity will instantly be reflected in a changed ratio.

To enter

a format that will show the debt to worth ratio displayed out to two decimal places
a label to indicate that row 87 is the debt to worth ratio row, and to show that the ratio is always a relationship of a number to 1, such as .50 TO 1
a value of .77 in cell F(D)87 which won't change, but which will be used to compare with changes in cell D(B)87
a formula in cell D(B)87 that will divide total liabilities (debt) by total owner equity (worth)

Type **>A87** and type **DEBT TO** →
>B(A)**87** and type **"(S)WORTH** → →
>D(B)**87** and type **/F$ + D**(B)**61/D**(B)**67** →
>E(C)**87** and type **"(S)TO 1** →
>F(D)**87** and type **/F$ .77** →
>G(E)**87** and type **"(S)TO 1** R

Result The value 0.77 should appear in cell D(B)87; the debt to worth ratio in both columns should read **0.77 TO 1**. If you don't get this result, check that you correctly entered the formula in cell D(B)87.

ROW 88 **The times interest earned ratio** is calculated by dividing the company's operating income by the amount of interest it pays on debt. A change in either operating income or interest will instantly be reflected in a changed ratio.

To enter

a format that will show the ratio expressed out to two decimal places
a label to indicate that row 88 is the times interest earned ratio row, and to show that the ratio is expressed as *times* (that income can cover interest payments, for example, 9 times)
a value of 9.20 in cell F(D)88, which won't change but which will be used to compare with changes in cell D(B)88
a formula in cell D(B)88 that will divide operating income by interest paid

Type **>A88** and type **TIMES I** →
>B(A)**88** and type **NTEREST** →
>C(A)**88** and type **"(S)EARNED** →
>D(B)**88** and type **/F$ + D**(B)**16/D**(B)**17** →
>E(C)**88** and type **"(S)TIMES** →
>F(D)**88** and type **/F$ 9.20** →
>G(E)**88** and type **"(S)TIMES** R

Result The value 9.20 should appear in cell D(B)88; the times interest earned ratio in both columns should read **9.20 TIMES**.

ROW 89 **The cash flow to the current portion of long-term debt ratio** is calculated by dividing the company's net income plus depreciation (or cash flow) by the current portion of long-term debt. The current portion is that part due for payment this year. Since the example doesn't have a line item for the current portion of long-term debt, we assume it is half of the total of other current liabilities on row 55. The formula will divide other current liabilities by 2 to get the current portion of long-term debt.

A change in any item contributing to net income or other current liabilities will instantly be reflected in a changed ratio.

To enter

a format that will show the ratio expressed out to two decimal places
a label to indicate that row 89 is the cash flow to current portion of long-term debt ratio row and to show that the ratio is expressed as *times* (that the current portion of long-term debt is covered by cash flow)
a value of 3.90 in cell F(D)89, which won't change but which will be used to compare with changes in cell D(B)89
a formula in cell D(B)89 that will divide net income plus depreciation by a portion of other current liabilities

Type **>A89** and type **CF TO C** ⏎
>B(A)**89** and type **RN'T PO** ⏎
>C(A)**89** and type **R. LTD.** ⏎
>D(B)**89** and type **/F$ (D**(B)**23 + D**(B)**14)/ (D**(B)**55–10000)** ⏎
>E(C)**89** and type **"(S)TIMES** ⏎
>F(D)**89** and type **/F$ 3.90** ⏎
>G(E)**89** and type **"(S)TIMES** R

Result The value 3.90 should appear in cell D(B)89; the cash flow to current portion of long-term debt ratio in both columns should read 3.90 TIMES.

ROW 93 **The profit margin ratio** is found by dividing the company's income before taxes by net sales. A change in any item contributing to income before taxes or net sales will instantaneously change the profit margin ratio.

To enter

a format that will show the ratio expressed out to two decimal places
a label to indicate that row 93 is the profit margin on sales ratio row and to show that the ratio is expressed as a percentage
a value of 13.33 in cell F(D)93, which won't change but which will be used to compare with changes in cell D(B)93
a formula in cell D(B)93 that will divide income before taxes by net sales and multiply the result by 100, so the result will read 13.33 (percent) rather than .1333

Type **>A93** and type **PRF'T M** ⏎
>B(A)**93** and type **ARGIN 0** ⏎
>C(A)**93** and type **N SALES** ⏎
>D(B)**93** and type **/F$ 100*(D**(B)**20/D**(B)**7)** ⏎
>E(C)**93** and type **"(S)%** ⏎
>F(D)**93** and type **/F$ 13.33** ⏎
>G(E)**93** and type **"(S)%** R

Result The value 13.33 should appear in cell D(B)93; the profit margin on sales in both columns should read 13.33%.

ROW 94 **The return on total assets ratio** is found by dividing the company's income before taxes by its total assets. A change in any item contributing to income before taxes or to total assets will instantaneously change the ratio.

To enter

a format that will show the ratio expressed out to two decimal places
a label to indicate that row 94 is the return on total assets ratio row, and to show that the ratio is expressed as a percentage
a value of 17.39 in cell F(D)94, which won't change but which will be used to compare with changes in cell D(B)94
a formula in cell D(B)94 that will divide income before taxes by total assets and multiply the result by 100, so that it reads 17.39 (percent) rather than .1739

Type **>A94** and type **RETRN.0** ⏎
>B(A)**94** and type **N TOTAL** ⏎
>C(A)**94** and type **"(S)ASSETS** ⏎
>D(B)**94** and type **/F$ 100*(D**(B)**20/D**(B)**48)** ⏎
>E(C)**94** and type **"(S)%** ⏎

>**F**(D)**94** and type **/F$ 17.39** →
>**G**(E)**94** and type **"(S)%** R

Result The value 17.39 should appear in cell D(B)94; the return on total assets ratio in both columns should read 17.39 %.

ROW 95 **The return on equity (worth) ratio** is calculated by dividing the company's income before taxes by total owner equity. A change in any item contributing to income before taxes or to total owner equity will instantaneously change the ratio.

To enter

a format that will show the ratio expressed out to two decimal places
a label to indicate that row 95 is the return on equity ratio row, and to show that the ratio is expressed as a percentage
a value of 30.77 in cell F(D)95, which won't change but which will be used to compare with changes in cell D(B)95
a formula in cell D(B)95 that will divide net income before taxes by owner equity and multiply it by 100 so the result reads 30.77 (percent) rather than .3077

Type >**A95** and type **RETURN** →
>**B**(A)**95** and type **ON EQUI** →
>**C**(A)**95** and type **TY** →
>**D**(B)**95** and type **/F$ 100*(D**(B)**20/D**(B)**67)** →
>**E**(C)**95** and type **"(S)%** →
>**F**(D)**95** and type **/F$ 30.77** →
>**G**(E)**95** and type **"(S)%** R

Result The value 30.77 should appear in cell D(B)95; the return on equity ratios in both columns should read 30.77 %.

Step Three

Save and protect your work. Save the finished Example.1 on a diskette.

Protecting the ratio formulas If you are using the Advanced Version, you can protect all of the cells in the ratio section of the example so they can't be inadvertently overwritten or erased. Since no data will be entered into any of the cells in this section of the example, it is suggested that you protect the entire section.

AV **To protect**
the ratios

Type >**A72** and type **/AMP** R R

To replicate
from one cell to a range

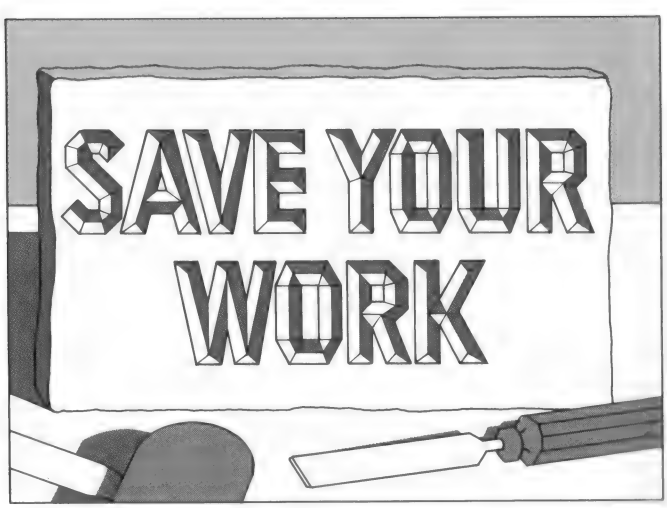
Type >**A72**
Type **/R**
The prompt line will read Replicate: (, Source Range or RETURN
Type **(**
The prompt line will read Replicate:Limit: ACNR)
Type **A)** R **A73.A95** R

from one range to a number of ranges

Type >**A72**
Type **/R**
The prompt line will read Replicate: (, Source Range or RETURN
Type **(**
The prompt line will read Replicate:Limit: ACNR)
Type **A) A95** R **B72.E72** R

Result All columns of the ratio section of the example are now protected. To check that they are, go to any cell and try entering a value, label, or formula. The new entry shouldn't be accepted and you should get a message telling you the cell is protected.

Save your work. This is the last time we will mention saving your work. By now you know to do it frequently.



Liquidity ratios

Liquidity is a company's ability to pay bills as they become due, to meet its short-term obligations. That ability is determined by whether what a firm has in cash and expects to convert to cash (by sale of inventory and/or collection of accounts receivable, for example) is sufficient to pay the debts that are due within a given period of time. This short-term debt-paying ability is of concern to everyone who interacts with a company. In many firms, there are periods when the firm is "illiquid" — unable to pay bills on time. If that situation is infrequent and only temporary, there is usually no problem. After all, we all have had that problem at one time or another. But if a firm is illiquid on a regular basis, or for a longer period of time, it is likely to find itself bankrupt.

Liquidity and profitability are different. It is possible, and indeed not uncommon, for a firm to be profitable and illiquid at the same time. But prolonged illiquidity will force a profitable firm into bankruptcy. If a firm cannot pay its short-term bills, it probably cannot pay off long-term debts when they become due. Therefore, liquidity is necessary to avoid financial failure and to allow investors the benefits of profitability.

To avoid such a crisis, an owner or manager of a company should regularly check the firm's liquidity, by estimating and monitoring actual cash flows or by employing liquidity ratios. Both approaches help a manager answer three basic questions about liquidity:

- Is there enough cash, or expected cash, to meet the needs of the firm for a given period of time?
- Is there enough cash, or expected cash, to cope with unexpected events?
- Is there enough cash, or expected cash, to take advantage of unforeseen opportunities?

The current and quick ratios, the measures of liquidity explained in the following pages, can help a manager assess how well the company is prepared for both the expected and unexpected. By using tools such as these ratios, the firm's safety and potential can be increased.

The current ratio

The current ratio was first used to measure liquidity before 1900, and it is one of the oldest and best-known measures of short-term financial strength. It is a general test of solvency. The ratio determines whether the current assets (cash or assets expected to be converted to cash within one year) are sufficient to cover current liabilities (those obligations that must be paid within one year) with a margin of safety for possible losses, such as inventory shrinkage or uncollectable accounts.

Because this ratio is so widely used by many people, including creditors and lenders, it is important to understand the information it provides. Then you can anticipate how your financial decisions are likely to influence the current ratio, and you can make the decisions that affect your liquidity wisely.

Also known as: Current assets to current liabilities; working capital ratio

When to calculate: Monthly

Where to find necessary data: The balance sheet

How to calculate the ratio: Divide current assets (dollar value) by current liabilities (dollar value)

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

Current assets include cash, marketable securities, accounts receivable, inventories, and prepaid expenses.

Current liabilities include accounts payable, short-term loans (or notes payable), the current portion (that part which is due for payment in the next 12 months) of long-term debt, and accrued expenses, if any (usually wages or taxes).

Form of answer: A ratio of a number to 1

Example:

$$\text{Current ratio} = \frac{\$1{,}000{,}000}{\$500{,}000} = 2, \text{ or } 2{:}1 \text{ (2 to 1)}$$

In our example, the current assets are twice as large as current liabilities, so the number given by the formula is 2. The ratio is therefore 2:1. The larger your current assets are in relation to your current liabilities, the higher the ratio (3:1, 4:1, etc.).

When current assets are smaller than current liabilities, the answer will be a decimal less than one, but it is still the current ratio. For example, if current assets are only half as large as current liabilities, the result of dividing the smaller by the larger is less than one:

$$\text{Current assets} = \$500{,}000$$

$$\text{Current liabilities} = \$1{,}000{,}000$$

$$\text{Current ratio} = \frac{\$500{,}000}{\$1{,}000{,}000} = .50, \text{ or } .50{:}1$$

How to analyze the ratio: A ratio showing currrent assets to be twice as large as current liabilities is generally accepted as indicating solid financial condition. An exception exists when a major part of the current assets is inventory, because inventory is the most difficult to convert to its market value in cash. For example, ratios below 2:1 prevail in businesses such as the food industry, or in other concerns where there are exceptionally fast turnovers of receivables and inventories. But in most industries, managers recognize that a current ratio of less

than 2 to 1 is a symptom of possible trouble. It is frequently an outward sign of financial stress, a warning signal. A 1:1 ratio tells a manager that the firm can just meet upcoming bills, while a 2:1 ratio means there is a financial cushion for any unforeseen events.

The current ratio should be used with judgment. Sometimes the story it tells is deceptive. A 4 to 1 ratio in a seasonal business might decline to 1.5 to 1 at the height of the sales season, when inventory decreases. Conversely, the current ratio could be high because of large amounts of accumulated unsold inventory. Therefore, always consider how much inventory is carried over from one season to the next. For instance, in the apparel trades you would track how many summer dresses are on hand in autumn. A high ratio can also result from a buildup of inventories due to falling sales; a low ratio can result from temporarily high current liabilities, such as when taxes are due during a period of previously high profits.

Always analyze the ratio according to the unique characteristics of your industry. Current ratios vary among industries. Consider the "fast food" service and heavy equipment manufacturing companies. Fast food restaurants may have decent cash and cash flow, but no receivables and minimal inventory. Most of their assets are fixed, but current bank loans, trades payable, and accruals (all liabilities) could be sizable. Say that current assets are $100,000, and current liabilities are $150,000. The current ratio is then .67:1, which looks dangerously low. In fact, you might conclude that the business cannot meet its future obligations. But fast food businesses may generate $3,000 a day in cash, or $90,000 in a month. Add that $90,000 to the current assets, and you get a total of $190,000. That would improve the current ratio from .67:1 to 1.27:1, a significant change. Service companies and heavy equipment manufacturers are also likely to have most of their asset investment in fixed assets. Their current ratios will look weak, but actually the nature of these industries produces the low current ratio, and not poor business management.

In looking at the current ratio over time, a steady increase would seem ideal. Certainly a 3:1 ratio is better than a 2:1 ratio, or 4:1 better than 3:1. But is a ratio of 20:1 better than 3:1? Is concern warranted if the monthly ratio fluctuates from 2.5:1 to 15:1, and back to 2.5:1?

These questions can only be answered by studying the particular business and analyzing the reasons behind the ratio fluctuations. Comparing the ratio against industry averages may also be helpful. The point to remember in analyzing the current ratio is that both the information underlying the ratio and the nature of the business have a bearing on the interpretation of the ratio.

Viewpoints:

Owner/stockholder. The stockholder of a firm usually prefers a low current ratio to a high one. Stockholders view investment in current assets, particularly cash and accounts receivable, as less productive than investment in equipment or inventory (which can increase current liabilities through financing). Because owners and stockholders are apt to be primarily concerned with profits and productivity, they usually prefer lower current assets and higher current liabilities that give a lower current ratio.

Banker. Liquidity is so important to bankers that it is often incorporated into a loan agreement. Bankers may require a company to keep a minimum level of net working capital (current assets minus current liabilities) or a minimum current ratio. Bankers look at net working capital and the current ratio over periods of time to determine a company's ability to weather financial crises. A high current ratio means more assets and a greater amount of net working capital. If either the ratio or net working capital falls below the level stipulated by the bank, the loan would be in default.

Like the owner/stockholder, the lender/creditor is wary of unusually high current ratios (above the acceptable range which is created by industry practices and the nature of the business). A very high ratio could mean that the current assets of a firm are not liquid, that is, easily converted into cash. This is a situation that would not please a potential lender.

In some instances, a banker may not feel that the current ratio is a sufficiently accurate measure of a firm's liquidity. This is especially true for businesses that have a large portion of current assets tied up in inventory, which may or may not be salable. In those cases, the banker will use the quick (or acid-test) ratio, described on pages 75–76.

Manager. The manager is caught in the middle between the owners' and lenders' views on the current ratio. Owners want profitability and a low ratio while lenders want safety and a high ratio. The manager must attempt to satisfy both, while maintaining adequate working capital and enough liquidity to insure the smooth functioning of the firm. The manager's decisions can directly affect the current ratio, since a manager has primary responsibility for financial planning. Managers recognize the need for profits and safety, and therefore they often aim for a ratio which is neither too high nor too low.

Managers need to exercise caution in maintaining a firm's liquidity ratio. Although liquidity generally reduces risks, and too low a ratio indicates increased risk, too high a ratio indicates unprofitable investment in current assets. A reasonable ratio usually falls within a range

determined by the firm's experience, or by observing industry averages. If the current ratio falls outside of the acceptable range, a manager needs to take actions that will bring the ratio back into line.

If your firm's current ratio is too low, ask questions such as:

- Can the company afford to pay some debts?
- Can current assets be increased by obtaining loans with a maturity of more than one year?
- Can current assets be increased from new equity contributions?
- Can non-current assets be converted to cash?
- Rather than take profits out or declare dividends, can management plow more profits back into the company?

If you determine that the current ratio is too high, ask:

- Is too much cash available, making the business a takeover candidate or subject to IRS review for excess earnings?
- Is accounts receivable high because of liberal credit policies or slow collections?
- Are inventories high because of excess raw material, work in process, or finished goods?
- Are current liabilities very low as a result of not taking advantage of trade credit or short-term bank loans?

A good manager can use the current ratio as a tool in formulating decisions regarding the firm's liquidity.

Adjustments and variations: An *adjustment* is a change made in the ratio itself by adjusting the information in the ratio numerator or denominator (usually by adding or subtracting an additional line item). A *variation* is a different ratio but one that is similar to the ratio being discussed.

There are no standard adjustments or variations made in calculating the current ratio. It is always total current assets divided by total current liabilities.

Getting ready to explore What Ifs

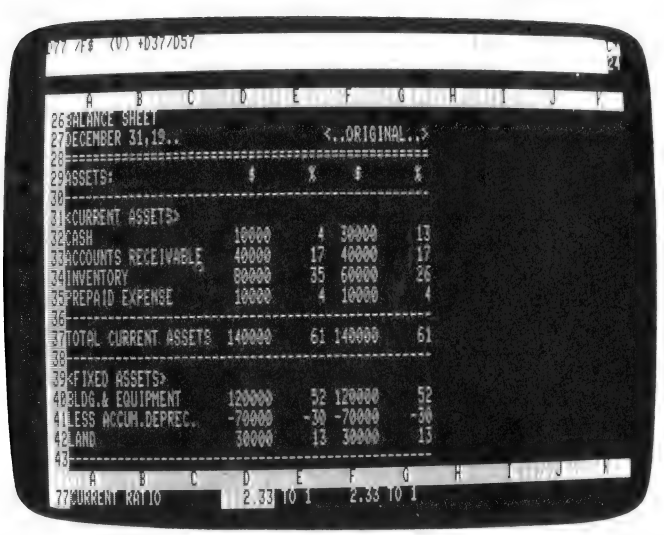
Put a window in the screen so row number 77 containing the current ratio won't be scrolled off the screen while you explore "What Ifs" in this chapter.

To enter

a window in the display at row 78 so the current ratio can be seen at all times

Type >**A77** and use the → key to scroll the display up one row so row 78 is the bottom row on the screen

>**A77** and type **/WH**



Result A window should now split the screen and row 77 with the current ratio should be visible in the lower window. If it isn't, use the ; (semi-colon) key to move the cursor into that portion of the display and use the → key to scroll until row 77 is visible.

Whenever you want to move the cursor between the upper and lower frames of the window just press the ; (semi-colon) key. The cursor will jump to the entry space it was in the last time it was in that portion of the display.

What if your liquidity situation changes?

WHAT IF 1 **Inventory is bought on credit.** Your business has current assets of $140,000 and current liabilities of $60,000. Suppose, in anticipation of a peak selling season, you purchase an additional $15,000 of inventory on credit. How will this purchase affect the current ratio?

Begin by moving your cursor into the lower window (type ;), and then scroll the display so that row 77 (the current ratio) can be seen. Then type ; again to return the cursor to the upper window.

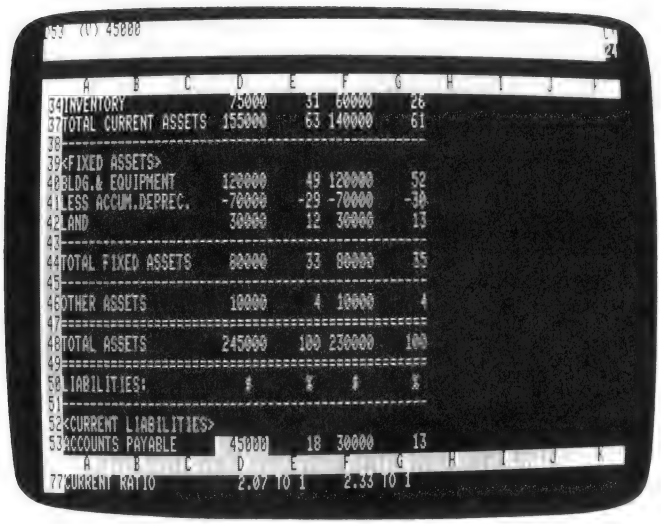
To enter

a change in recalculation from manual to automatic
changes in inventory from $60,000 to $75,000 and accounts payable from $30,000 to $45,000

Type /GRA
>**D**(B)**34** and type **75000** (R)
>**D**(B)**53** and type **45000** (R)

Result When inventory increases to $75,000, total current assets rise from $140,000 to $155,000. At the same time, accounts payable increases from $30,000 to $45,000 and total current liabilities increases from $60,000 to $75,000. The current ratio drops from 2.33 to 1 to 2.07 to 1.

ANALYSIS The reason for the ratio drop is mathematical. When a ratio is anything but 1:1, and you add the same amount to both the numerator and denominator of that ratio, the smaller of the two numbers (numerator or denominator) is affected more. The increase is a larger *percentage* increase for the smaller number, and that percentage difference causes the ratio to change.



The current ratio is determined by dividing current assets by current liabilities. In this example, you increased both assets and liabilities by the same amount, $15,000. But $15,000 is a larger percentage increase for current liabilities than it is for current assets. Therefore, the ratio drops when assets are divided by liabilities.

But the drop is not a serious one and still leaves an acceptable current ratio. Since the owner reasonably expects to sell the inventory off (it's a peak season), the drop is probably only temporary and justifiable.

WHAT IF 2 **You pay some debts.** Instead of buying inventory, you decide to pay some bills amounting to $5,000. You'll then have $5,000 less in cash and $5,000 less in debts. How will this affect your company's liquidity position as shown in the current ratio?

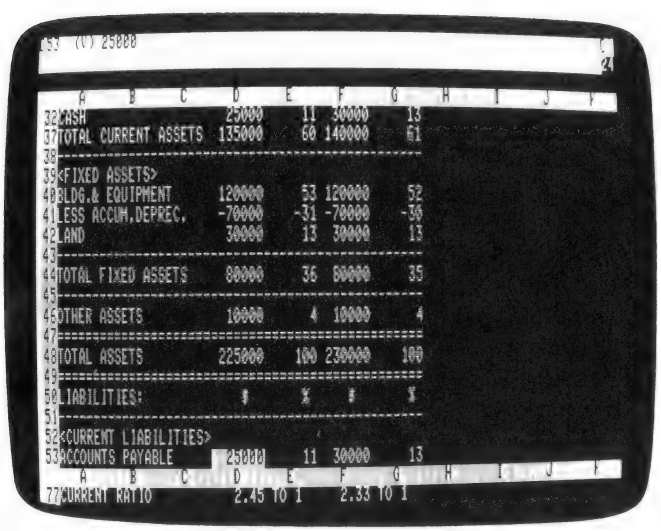
To restore

the example

Type >**D**(B)**34** and type **60000** (R)

To enter

a change in cash from $30,000 to $25,000 and a change in accounts payable from the original $30,000 to $25,000 (changed to $45,000 in the previous "What If")



Type >**D**(B)**32** and type **25000** (R)
>**D**(B)**53** and type **25000** (R)

Result Current assets are reduced to $135,000 and current liabilities are reduced to $55,000. The current ratio increases from 2.33:1 to 2.45:1.

ANALYSIS Again, the ratio changes because the same dollar change in the ratio numerator and denominator has a different effect on both numbers if they are not the same. In the last "What If," you added the same amount. In this "What If," you subtracted the same amount, $5,000. $5,000 is a larger percentage decrease for liabilities, which is a smaller figure than assets. Therefore, when you divide assets by liabilities, the current ratio rises.

WHAT IF 3 **You sell a long-term asset.** Let's see what happens to the current ratio if you sell a long-term (fixed) asset for cash. Assume the firm has a large delivery truck, which you sell at book value for $20,000. This sale decreases the book value of your buildings and equipment account, but increases your cash (part of current assets). How will this affect the current ratio?

To restore
the example

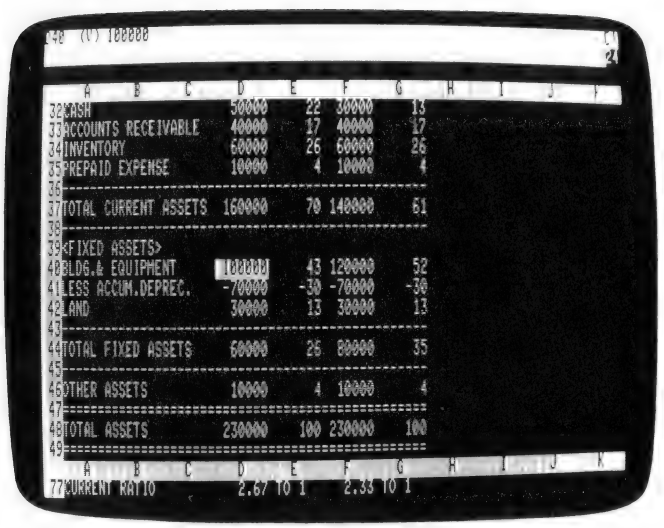
Type >**D**(B)**53** and type **30000** (R)

To enter
changes increasing cash from $30,000 to $50,000 and decreasing buildings and equipment from $120,000 to $100,000

Type >**D**(B)**32** and type **50000** (R)
>**D**(B)**40** and type **100000** (R)

Result Total current assets rise from $140,000 to $160,000, and the current ratio increases from its original 2.33 to 1 to 2.67 to 1.

ANALYSIS The current ratio measures current assets against current liabilities. If a long-term asset is sold, its removal doesn't change the current liabilities at all, unless there is a short-term loan secured by the truck. In that case, the loan will have to be paid off with the proceeds of the sale. If it is sold for cash, however, that cash sum is added to current assets, making that figure larger in relation to the unchanged current liabilities. The net result is an increased ratio.



WHAT IF 4 **You increase current assets by selling additional common stock.** For example, let's assume $15,000 in cash can be raised through a sale of stock to an investor.

To restore

the example

Type >**D**(B)**40** and type **120000** (R)

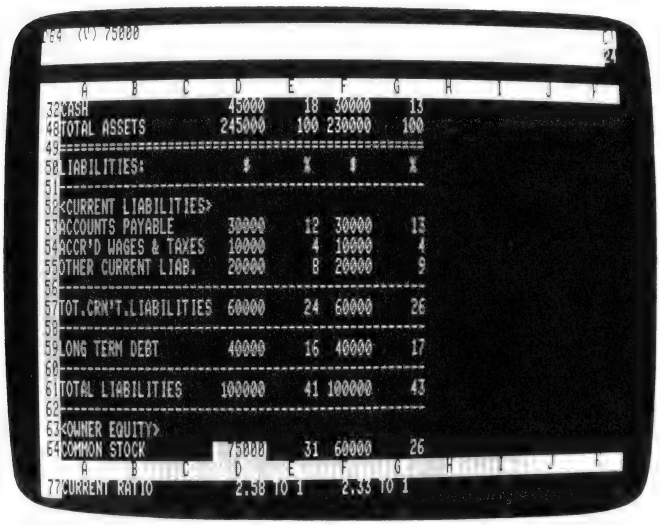
To enter

changes increasing cash from its original $30,000 (increased to $50,000 in the previous "What If") to $45,000, and increasing common stock from $60,000 to $75,000

Type >**D**(B)**32** and type **45000** (R)
>**D**(B)**64** and type **75000** (R)

Result This time, current liabilities are not affected (decreased) because common stock is a long-term item. But current assets increase from $140,000 to $155,000. Therefore, the current ratio rises to 2.58:1 and working capital (current assets minus current liabilities) increases from $80,000 to $95,000.

ANALYSIS When long-term money is raised, it immediately improves the current ratio. Long-term money increases current assets and leaves current liabilities unchanged. Usually, cash raised in this manner is used to invest in inventory or fixed assets, or to reduce debt. When the cash is spent, the current ratio changes again.



In the example, working capital also increased. Working capital is the difference between current assets and current liabilities (current assets minus current liabilities). Current assets are those assets which can be converted to cash most easily. Current liabilities are those debts which must be paid in the immediate future. Thus, working capital is another measure of short-term solvency. Bankers often require a company to maintain a minimum level of working capital to keep a loan in good standing.

The quick ratio

The quick ratio is a conservative test of a firm's liquidity. In fact, it is so stringent that it is sometimes called the "acid-test" ratio. This name derives from a fundamental test of liquidity in the Middle Ages. In those times, payment was often made in the form of gold or gold coins. To insure that payment was good — real gold — acid was applied to the coins. If the test was positive, the gold was good and payment was accepted. The acid test was fool-proof. Although people today don't apply acid to coins or to a firm's books to assess payment, they do apply the acid-test ratio. Like its early forebear, this ratio measures true payment potential, or the ability of a firm to meet its short-term obligations.

Why, you might ask, is the quick ratio considered the real "acid test" of liquidity and not the current ratio? Don't both examine the relationship between current assets and liabilities? They do; the answer lies in inventory. The quick ratio is a more stringent test than the current ratio because it does not include inventory in its formula, while the current ratio does. Inventory is the least liquid current asset. It represents goods which are not yet sold; goods which could be unsalable, salable only at a discount, or even become obsolete with age (or the development of new technology). Therefore, by removing inventories from the formula, the quick ratio concentrates on the really liquid assets, where values are fairly certain. It helps to answer the question, "If all sales revenues should disappear, could my business meet its current obligations with the readily convertible 'quick' funds on hand?"

Also known as: Acid-test ratio
When to calculate: Monthly
Where to find data: The balance sheet

How to calculate: The quick ratio is the firm's "quick assets" divided by current liabilities.

$$\text{Quick ratio} = \frac{\text{Cash + Marketable securities + Accounts receivable}}{\text{Current liabilities}}$$

$$\text{or: } \frac{\text{Current assets} - \text{inventory}}{\text{Current liabilities}}$$

Quick assets include cash, marketable securities, and trade receivables. Inventory is left out for the reasons outlined above. Prepaid expenses are also not considered since they will not be converted to cash at any time. (Note: If one of your notes receivable is a loan to management or a stockholder, it should not be included.)

Current liabilities are made up of accounts payable, notes payable (loans due within one year or loans due upon demand), accrued expenses (such as taxes and wages), and any long-term debt payment due within the next twelve months.

Form of answer: A ratio of a number to 1. The ratio shows the number of times the most liquid assets will cover current liabilities; 1.17 times in the following example:

Example:

$$\text{Quick ratio} = \frac{30{,}000 + 40{,}000}{60{,}000}$$

$$= 1.17, \text{ or } 1.17 \text{ to } 1$$

How to analyze: For manufacturers, a quick ratio of 1:1 is considered acceptable. Retail, wholesale, and service firms will usually have a quick ratio less than 1:1. Again, there are numerous exceptions depending on the industry.

A general feeling about the quick ratio (and also the current ratio) is that the higher the ratio, the better. That may be true from your creditors' point of view, because creditors stress prudence and safety. But you, as an owner or manager, should aim to keep your business strong and trim, rather than fat. Idle cash balances and receivables out of proportion to your selling needs should be reduced. The key to successful financial management is to conserve the resources of your business and to make those resources work hard for you. Therefore, you want a healthy quick ratio, but not an inflated one (too high).

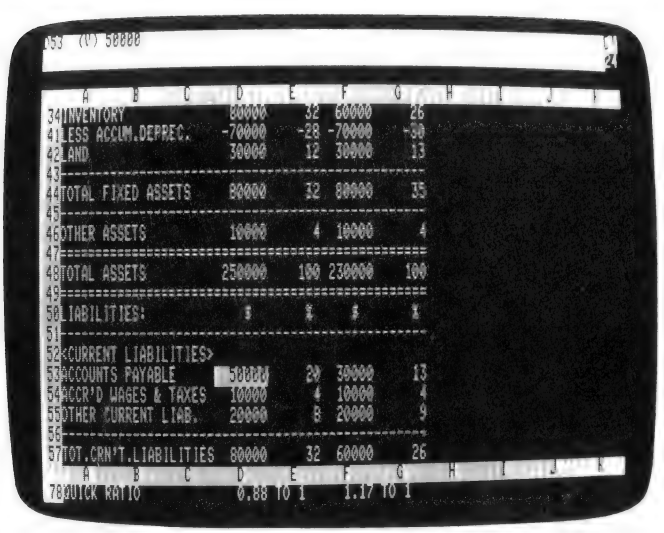
Remember that the quick ratio is a measure of liquidity, but it does not tell you exactly how liquid your current assets are. That could only be determined by actually converting the assets to cash. The ratio is a general indication of your firm's ability to meet maturing obligations if its assets, excluding inventory and prepaid expenses, were to be converted to cash. There can always be a difference between the projected value and the real cash value of assets.

Viewpoints: The viewpoints of owner/stockholder, banker, and manager toward the quick ratio are essentially the same as their viewpoints toward the current ratio described previously.

Adjustments and variations: None

WHAT IF 5 **Inventory is bought on credit.** Will buying inventory on credit affect the firm's liquidity, as measured by the quick ratio, which ignores inventory? Let's assume that you buy $20,000 worth of inventory on trade credit. The purchase increases inventory to $80,000 and accounts payable to $50,000.

Begin by moving your cursor into the lower window (type ;), and then scroll the display so that row 78 (the quick ratio) can be seen. Then type ; again to return the cursor to the upper window.



To restore

the example

Type >**D**(B)**32** and type **30000** (R)
>**D**(B)**64** and type **60000** (R)

To enter

changes increasing inventory from $60,000 to $80,000 and accounts payable from $30,000 to $50,000

Type >**D**(B)**34** and type **80000** (R)
>**D**(B)**53** and type **50000** (R)

Result Total current assets (row 37) increases from $140,000 to $160,000, and total current liabilities (row 57) increases from $60,000 to $80,000. The quick ratio falls from 1.17 to 1 to .88 to 1.

ANALYSIS What causes the drop in the quick ratio? The quick ratio does not include inventory under current assets, so current assets don't change. But current liabilities increase, because the inventory is bought on credit; this increases accounts payable (a line item under current liabilities). So the numerator (cash, marketable securities, and accounts receivable) remains the same in the ratio but the denominator (current liabilities) increases by the amount of the purchase. The result is a decreased ratio.

But what if you purchase the inventory with cash instead of credit? Would the quick ratio change in the same way? The answer is in the next "What If."

WHAT IF 6 **You pay an accounts payable with cash.**

Suppose the inventory you bought (in the prior example) hasn't sold. Now you must pay the supplier from cash on hand, the total $20,000. This will decrease your cash line and your accounts payable line by $20,000, but will it also decrease the quick ratio?

To restore

the example

Type >**D**(B)**34** and type **60000** (R)

To enter

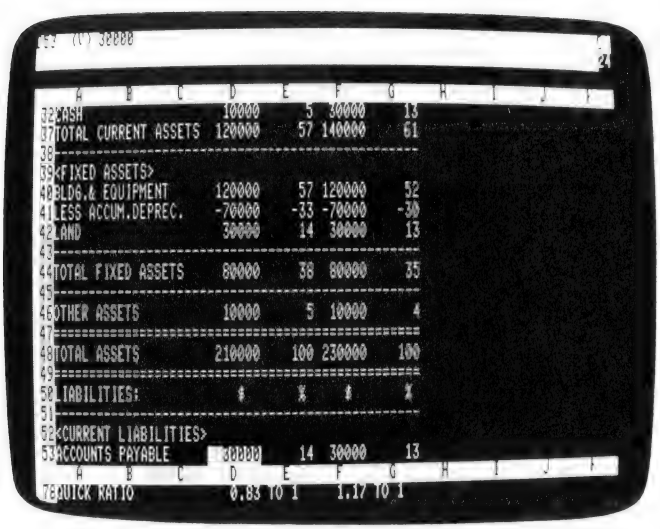
changes in cash from $30,000 to $10,000 and accounts payable from its present $50,000 to $30,000

Type >**D**(B)**32** and type **10000** (R)
>**D**(B)**53** and type **30000** (R)

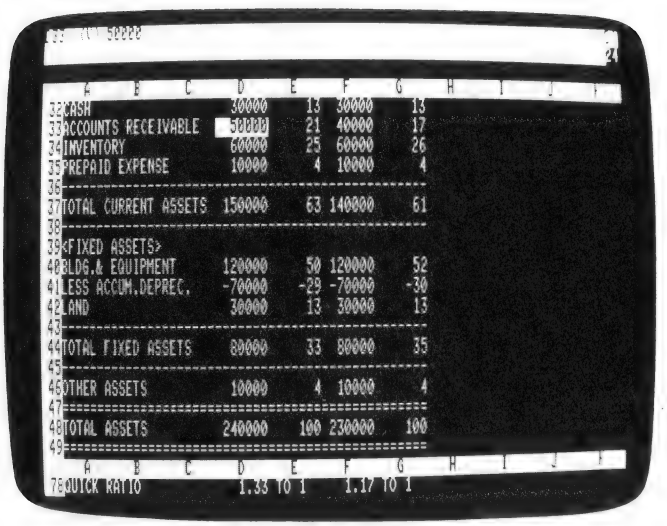
Result The quick ratio drops even further — from .88:1 to .83:1.

ANALYSIS Cash is part of the quick ratio calculation. Using cash to pay the accounts payable decreases the ratio. For a ratio less than 1, such as .5 to 1 or .99 to 1, an equal decrease in both the numerator and denominator in the formula causes the ratio to drop.

The situation explored in this example is common in seasonal businesses. Inventory is acquired to meet expected demand, but then it has to be paid for before it is sold. As a result, liquidity temporarily decreases because a larger percentage of assets is tied up in inventory, which is less liquid than cash. If you miscalculate sales and you do not convert the inventory to cash through increased sales, you can face a liquidity, or cash, crisis.



WHAT IF 7 **Collection of accounts receivable slows down.** Let's look at a situation that you've probably faced in the last few years. Your customers take longer to pay, and as a result your accounts receivable increases. You don't want to slow down payments to your suppliers (accounts payable) because you don't want to lose the firm's credit standing. You're caught in the middle. To give this situation some hard numbers, assume your accounts receivable increases from $40,000 to $50,000. Let's see what happens to the quick ratio.



To restore

the example

Type >**D**(B)**32** and type **30000** (R)

To enter

changes increasing accounts receivable from $40,000 to $50,000

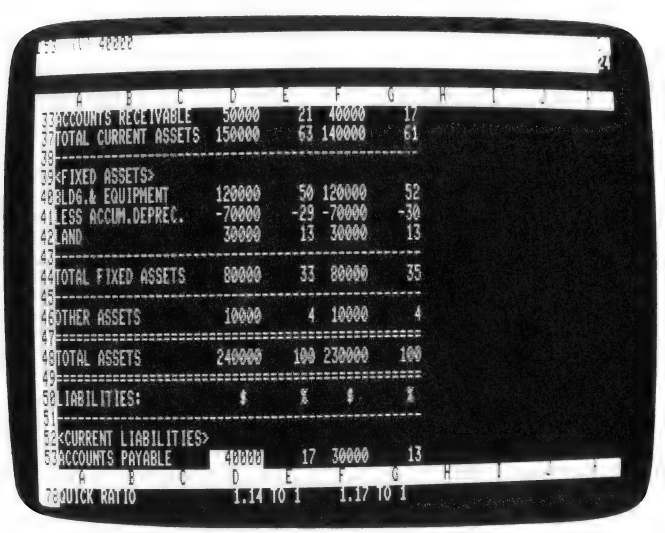
Type >**D**(B)**33** and type **50000** (R)

Result Current assets increase from $140,000 to $150,000 as a result of the higher accounts receivable. Current liabilities don't change. The quick ratio then increases from 1.17 to 1 to 1.33 to 1.

ANALYSIS Is your firm more liquid? A liquid asset, accounts receivable, is up, and the quick ratio is up. But, if your sales are not also increasing and you haven't made any changes in your credit terms or policies, then an increase in the quick ratio caused by an increase in accounts receivable may signal a potential problem. There will be a slowdown in cash flow caused by the slowdown in collection of accounts receivable. In this case, the increase in the quick ratio is deceiving; it isn't a positive sign.

Remember that you still have to collect on the accounts receivable to get cash. And cash is what you pay bills with, not accounts receivable.

WHAT IF 8 **You slow down payments to creditors.** What would happen if you slowed down your own payments to creditors to compensate for your problem in collecting receivables? This way, you wouldn't have to call in any shareholder loan or sell fixed assets to raise the needed funds. In this example, let's increase accounts payable by $10,000.



To enter

a change increasing accounts payable from $30,000 to $40,000. (Accounts receivable remains $50,000, from the previous "What If.")

Type >**D**(B)**53** and type **40000** (R)

Result Current assets stays the same, but total current liabilities increases from $30,000 to $40,000. The quick ratio falls from 1.17 to 1 to 1.14 to 1.

ANALYSIS In this situation, the $10,000 addition to accounts receivable is exactly offset by the $10,000 increase in accounts payable. The level of working capital is unchanged, but the quick ratio declines. In terms of working capital level, you are in the same position as before. But in terms of your ability to satisfy obligations (pay your bills in a timely manner), you are in a worse position.

The longer customers take to pay you, the more likely it is that they will never do so. The result is a higher level of bad debts. And the longer you take to pay your creditors, the more likely it is that your credit standing will be hurt. This can have an effect on the willingness of suppliers to offer credit terms. Even if they do offer terms, they may not be as attractive as they would be if you paid bills quickly. This can mean higher costs to you.

BUSINESS TIPS Annualizing a ratio

We suggest that you calculate most of the financial ratios monthly, because that will give you a better feel for how well the firm is being managed. Not only will it help you track your company's performance against ratio goals, but it will serve as an early warning system designed to help you avoid disastrous situations. But, before you can compare these monthly ratios against annual ones (as reported in many industry average studies), you must adjust certain monthly ratios. Otherwise, your monthly ratios could look very out of line.

There are two ways to convert a monthly financial ratio to an annual one. The first approach is to multiply the relevant income statement data in a ratio by 12. A monthly income statement shows income and expenses for just one month. These are much lower than the annual income statement data. When monthly income statement data are combined with balance sheet information to form ratios, the ratios will appear too high or too low depending on the ratio. Multiplying the income statement data in the ratio by 12 annualizes the ratio and gives you a number that can be more easily interpreted and compared with industry averages.

The second method is to either multiply or divide the monthly ratio by 12. If the income statement data appears in the numerator of the ratio, the monthly ratio should be multiplied by 12. If the income statement data is in the denominator, the monthly ratio should be divided by 12.

Let's take an example. The inventory turnover ratio combines information from the income statement and balance sheet. Here's what it would look like calculated on a monthly basis:

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Inventory}}$$

$$\text{Inventory turnover} = \frac{\$15{,}000}{\$60{,}000} = .25 \text{ times}$$

This means that inventory turns over one quarter times each month. To annualize the ratio and make it comparable to industry averages, either multiply cost of goods sold by 12:

$$\text{Inventory turnover} = \frac{\$15{,}000 \times 12}{\$60{,}000}$$

$$= \frac{\$180{,}000}{\$60{,}000} = 3 \text{ times}$$

or multiply the monthly turnover by 12:

$$\text{Monthly inventory turnover} \times 12 = .25 \times 12$$

$$= 3 \text{ times}$$

In seasonal businesses the annualized ratios will fluctuate, reflecting the swings in business activity. For example, the inventory turnover may vary from 1 or 2 times during the slow period to 12 or 15 times during the peak period. Knowing the seasonal pattern of the annualized ratios will help you see when things are getting out of line and allow you to take appropriate action before it is too late.

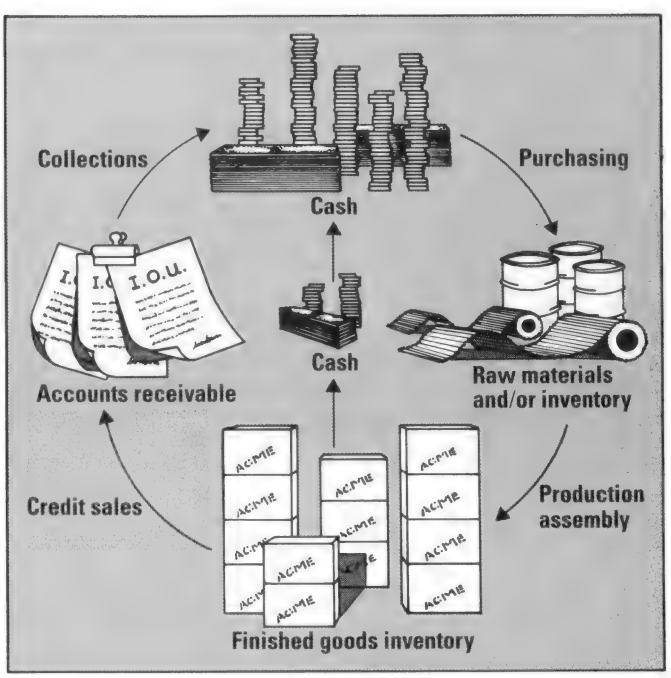
Asset management ratios

How do you know if your company's assets are being managed efficiently? How can you tell if their potential is being realized? Asset management ratios, also known as asset efficiency ratios, can help you answer these questions. The value of the questions is obvious; since assets are one of your company's basic resources, you want to assure that they are being employed efficiently and productively. It takes capital to finance assets, and asset management ratios can give you an indication of whether your company is overinvested or underinvested in the various assets.

Generally, you want to keep your assets and cash working for the company to produce profits. One useful way of looking at that mission is called the *cash cycle* or *cash wheel*, illustrated below.

The cash wheel starts at *cash*. Cash is used either to buy goods for sale (inventory in a retail business) or to make goods for sale (finished goods converted from raw materials in a manufacturing business). Either way, some cash becomes invested in inventory, the goods to be sold. When those goods are sold on credit to a customer, an account receivable is created. Cash is due back into the company, and when the receivable is collected, that cash (preferably your cost of providing the good or service plus profit) is put back into the cash wheel. The cash is ready to be used again, and if it includes a profit, there is more cash fed into the cycle.

The objective is to speed up the spinning of the cash wheel, thus managing assets efficiently. This can be done by increasing sales while maintaining the same level of inventory and receivables, or by reducing inventory and receivables while maintaining a constant level of sales. Either approach keeps the cash wheel moving and working. Note that cash, in the wheel, is held up in inventory and receivables. The longer it stays in these asset forms, the slower the wheel turns. When inventory and receivables become too much of a drag on the wheel, management action measures to reduce that braking effect need to be taken. For example, you could stop selling to slow-paying customers (reducing receivables time) or stop carrying slow-moving items (reducing inventory).



A useful way of seeing if your assets are being managed efficiently is the cash wheel.

But spinning the cash wheel too fast can cause problems. You can't cut receivables and inventory to zero in your efforts to spin the wheel. Credit sales and receivables are necessary for most firms to remain competitive. Inventory is required to avoid stock out problems. There will always be pockets of cash tied up by your investment in accounts receivable and inventory. The objective of asset management involves not only efficient and effective cash management (the cash wheel), but insuring that there is sufficient investment in your working capital assets to remain competitive.

Asset management ratios provide a way of examining the entire cash wheel, because they examine the level of a company's investment in current assets in relationship to the level of that company's operations, or sales. Like all ratios, they piece together information. In this case, the level-of-investment figures are taken from a company's balance sheet and the level-of-operations figures (usually in the form of net sales or cost of goods sold) are taken from the income statement. The ratios put the figures together in a meaningful way.

Two asset management ratios are covered: an inventory turnover and the average collection period. Inventory turnover measures how often an asset, such as inventory, "turns over" or moves through the business during a period of time, such as a month or year. It also tells you how long you are tying up cash in that asset before it sells. The average collection period ratio measures how long cash is tied up in the sale before it is converted into cash. Both of these forms of asset manangement ratios are useful to management. By watching them over a period of time, managers can spot trends or potential problem areas, and then take corrective action.

Average collection period

The average collection period represents the average length of time a firm's accounts receivable are outstanding — or the average length of time between when a credit sale takes place and cash from the sale is actually

received. In today's credit economy, very few firms can avoid selling on credit. These credit sales create accounts receivable, which are shown as a current asset on the balance sheet. They represent future cash inflows to the business.

The level of accounts receivable that you maintain on your balance sheet is directly related to your level of credit sales and the seasonality of sales. The accounts receivable balance is also affected by other management areas, including sales volume, credit policy and credit terms offered, and collection practice. Sales volume creates accounts receivable. Credit policy refers to the means you use to evaluate potential credit customers and determine which ones receive credit and which ones don't. The credit terms (such as discounts or net 30) you extend to customers also affects the level of receivables. Generally, credit terms outline how long customers have to pay and whether any discounts are available. They are usually determined by prevailing industry practices. Your collection practices, or how vigorously you pursue late-paying customers, also partially determine how fast customers pay you. All these factors — credit sales, policy and terms, and collection practices — affect the average collection period.

The average collection period, then, indicates the quality of your customers (how well your credit policy works), how effective your credit terms are, and whether the collection department is performing at an acceptable level.

Also known as: Collection period ratio; average collection period of receivables; days receivables

When to calculate: Monthly or yearly

Where to find data: Credit sales is found on the income statement; receivables is found on the balance sheet.

How to calculate: Accounts receivable is divided by average sales per day:

$$\text{Step 1: Daily credit sales} = \frac{\text{Credit sales}}{\text{\# days in period}}$$

$$\text{Step 2: Average coll. per.} = \frac{\text{Receivables}}{\text{Daily credit sales}}$$

Credit sales is used in the numerator of the receivable turnover. To be accurate in your calculations, you can only use that part of sales activity which creates the accounts receivable, which is credit sales, not net sales.

Receivables should include all accounts receivable and notes receivable that arise from credit sales, less your allowance for bad debts. This means that if a note receivable from a manager or stockholder is included in receivables, it should be subtracted out before the calculations are performed.

Form of answer: Days

Example: (*Note*: Since our sample income statement and balance sheet are for a full year, this is the formula for a yearly ratio.)

$$\text{Daily credit sales} = \frac{300{,}000}{365} = 821.92$$

$$\text{ACP} = \frac{40{,}000}{821.92} = 49 \text{ days}$$

The ratio shows the average number of days it takes a company to collect its receivables, or the average days between credit sales and receipt of cash payment for those sales. In this case, the average customer pays you 49 days after a credit sale.

How to analyze the result: The general rule of thumb is that the average collection period should not exceed 1.3 times the credit period you extend to customers. So if the credit period is 30 days, the average collection period should be no more than 39 days (30 x 1.3). If the collection period is too high, you may be extending credit to customers who are not creditworthy. If this is the case, their bad debts may build up and reduce your profitability. A high collection period may also indicate lax collection practices, a no-discount policy, or a large number of alternative suppliers for your customers. Also, if one or two customers account for a large portion of your credit sales, they can cause your average collection period to change dramatically, according to when they pay. On the other hand, if the collection period is too low, you may be too careful in extending credit. In this case, you may be turning away customers who would pay and add to your profits.

One of the major problems in small firms is that they frequently don't write off bad debts in a systematic manner. If the balance sheet carries accounts receivable with no allowance for bad debts, then the average collection period is going to be slightly higher than it would be if the firm took action on customers who don't pay. One way to check the situation is through the *aging of receivables* method. You list how many of your receivables have been due for over 30 days, 60 days, 90 days, and so forth. Then, depending upon your type of business and the standard credit terms offered by others in your industry, you can target a certain level of receivables for attention and possible elimination.

Viewpoints: Everyone (except your customers) looks for the same thing: a fairly low average collection period.

Owner/stockholder. Stockholders want the business to produce as high a level of sales and profits as possible. At the same time, they prefer a low investment in accounts receivable and therefore a low average collection period. These two objectives conflict. Pushing for higher

sales introduces the risk of taking on less creditworthy customers and creating bad debts. Pursuing vigorous collection on receivables to keep the receivables investment low is likely to discourage customers from buying from you. So a balance between the two objectives must be reached. You should be willing to take on less creditworthy customers (to create higher sales) up to the point where the bad debt and additional collection costs exceed the additional profits you earn by selling to these customers.

Banker. The average collection period is an indication to a banker of how well you're managing the firm's assets, and how quickly you're able to get cash from credit sales back into the business. Bankers, then, are interested in the average collection period, but are not quite as interested as the owner or manager.

Manager. The manager wants to keep a low collection period but must exercise judgment about the best way to do that. The manager has to maintain the firm's cash flow, so he or she must weigh the effect of giving up less creditworthy sales against the possible cash to be gained from those sales (even if it takes 90 days to collect). The manager must find the workable receivables level for the sales level, and then determine a reasonable range for the average collection period. Credit policies and terms and collection practices can then be used by the manager to alter the average collection period. The manager must also remember that a decrease in the average collection period brings a cash infusion into the company, but only once per decrease. For example, if you have an average collection period of 50 days for a given level of sales and you reduce the period by 10 days, you've made 10 days of credit sales in the form of cash available. But this won't be repeated in the next collection period unless you achieve a further decrease.

Adjustments and variations: There are several adjustments to and variations of the average collection period. Remember that an adjustment is a change made in the ratio itself by adjusting the information in the ratio numerator or denominator. A variation is a different ratio but one which is similar to the ratio being discussed.

Monthly adjustment. Most books on ratio analysis suggest using a full year — 365 or 360 days — to determine the average collection period. However, if you wait until the end of the year to evaluate the average collection period, it may be too late to take corrective action. So, monthly calculation of the average collection period is preferred. To obtain a monthly ratio, calculate daily credit sales using the month's sales and 30 as the number of days in the month. The formula is then:

$$\text{Daily credit sales} = \frac{\text{Credit sales}}{30}$$

$$\text{Average collection period} = \frac{\text{Receivables}}{\text{Daily credit sales}}$$

For example,

$$\text{Daily credit sales} = \frac{\$25{,}000}{30} = 833$$

$$\text{Average collection period} = \frac{\$40{,}000}{833} = 48 \text{ days}$$

Monthly ratios are particularly useful in determining seasonal collection patterns, so that managers can anticipate possible cash flow problems.

Average accounts receivable variation. Another common variation uses average accounts receivable instead of the month-end or year-end balance. To get average receivables, you simply take the last period's balance plus the current receivables, and divide this sum by 2. When you perform this adjustment on monthly collection periods, it will tend to smooth out seasonal fluctuations. Therefore, it is not recommended for internal management purposes. If, however, you are approaching a lender for a loan and you have experienced a large increase in sales over the last year, this adjustment may be appropriate. When sales increase, accounts receivable also increases, unless there has been a shift in the ratio of credit to cash sales. This means that the higher level of sales at the end of the period will produce a higher receivables balance. Since receivables represent your more recent credit sales and annual sales show the total sales without depicting the increase throughout the year, your receivables will actually be high in relation to total annual sales. Using average receivables more fairly represents your actual financial position in this case.

What if you change your management of accounts receivable?

WHAT IF 9 **You relax credit standards.** You decide to extend credit to potential customers who are not as creditworthy as your existing ones. It's a calculated gamble, but you estimate that this new group could generate $30,000 in additional credit sales and cause your accounts receivable to increase by $10,000. What impact will relaxing credit policy have on your average collection period?

Begin by moving your cursor into the lower window (type ;), and then scroll the display so that row 82 (the average collection period) can be seen. Then type ; again to return the cursor to the upper window.

To restore

the example

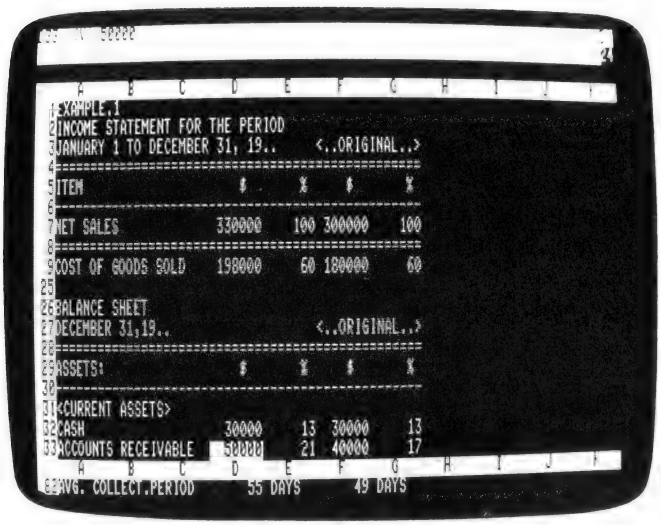
Type >**D**(B)**53** and type **30000** (R)

To enter

changes increasing net sales from $300,000 to $330,000 (Accounts receivable stays at $50,000 from "What If" 7)

Type >**D**(B)**7** and type **330000** (R)

Result Sales increase $30,000, accounts receivable increases $10,000, and the average collection period increases from 49 to 55 days.



ANALYSIS Any change in credit standards that leads you to accept less creditworthy customers will probably increase your average collection period. Is this bad? Not necessarily. But the six day increase in the average collection period means that you must have extra resources available to do two things: finance the increase in accounts receivable, and cover the temporary disruption in cash flow.

You can finance the increase by decreasing an asset (such as reducing cash) or by increasing a liability or equity account (such as increasing retained earnings from the increased sales). Remember that the balance sheet must balance. A change in one item, such as accounts receivable, requires a corresponding change in another item.

But your cash flow must also be adjusted if your average collection period rises. Cash flow is determined by how much and when your customers pay you. Money received from customers should be sufficient to cover operating expenses and potential bad debts, and contribute to profit. Whenever the collection period increases, cash inflow slows down, at least temporarily. To cover the cash slowdown, you can decrease your cash on hand, or find another source of funds, such as increasing your accounts payable (slowing down your payments to your suppliers).

The potential disadvantages of relaxing credit standards and increasing the average collection period include the possibility of additional bad debts, increased collection expenses, and additional management costs. The possible advantage is increased profit. If the profits outweigh the costs, then the new group of customers should be taken on.

WHAT IF 10 **Accounts receivable collection slows down.** Assume that times are bad. You manage to maintain your sales level at $300,000, but your customers pay more slowly so your accounts receivable increases dramatically to $70,000. How will this affect your average collection period?

To restore

the example

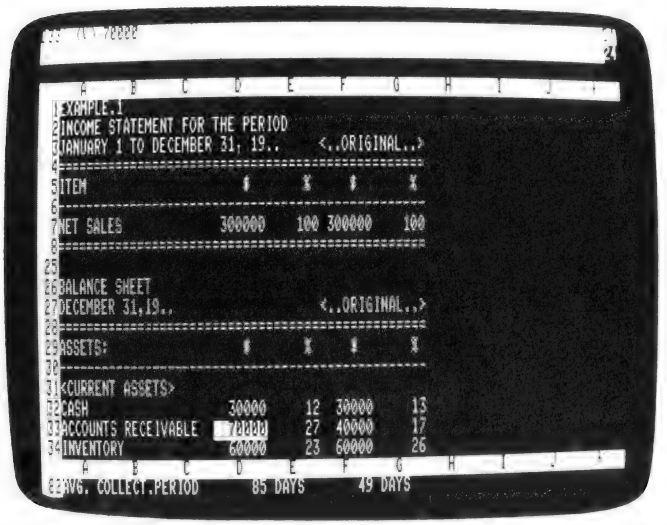
Type >**D**(B)**7** and type **300000** (R)

To enter

a change increasing accounts receivable to $70,000

Type >**D**(B)**33** and type **70000** (R)

Result The average collection period almost doubles, from 49 to 85 days.



ANALYSIS A doubling of the average collection period obviously presents a serious situation. Not only does this increase disrupt your cash flow (needed to pay your own bills and expenses), but the increase in accounts receivable must be financed as well. Immediate action is required to reduce the average collection period. The obvious method is to increase collection efforts. It may also be helpful to assess the customers' reasons for delaying payment. Their sales may be down and they may be having cash-flow problems themselves. Or, they may be waiting to sell your goods or products before they pay you. If that is the situation, they may also delay making future purchases from you. This means you must anticipate a potential decrease in your sales.

There are several possible causes for a high average collection period. Try to find out what they are, and then take corrective action.

WHAT IF 11 **Sales decrease and collection slows down.** Sales fall by $30,000 to $270,000 and, at the same time, customers slow down their payments so your accounts receivable stays at $40,000. How does this affect you?

To restore

the example

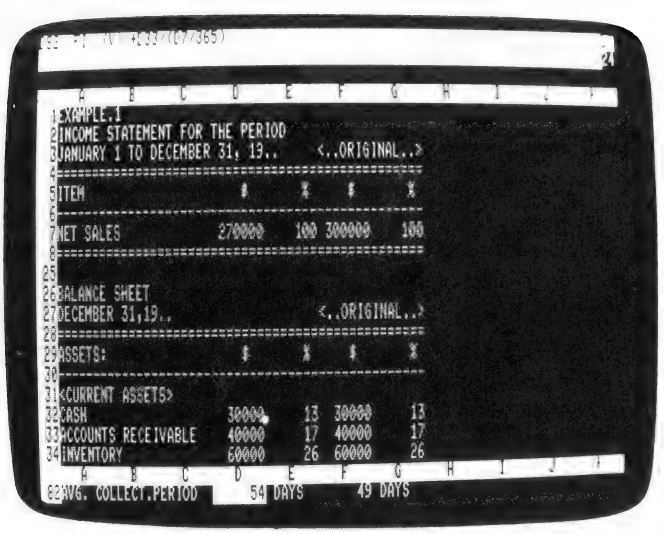
Type >**D**(B)**33** and type **40000** (R)

To enter

a change decreasing net sales from $300,000 to $270,000

Type >**D**(B)**7** and type **270000** (R)

Result Average collection period increases from 49 days to 54 days.



ANALYSIS Again, the increase in the collection period will produce cash-flow problems due to the slower payment. Recall the cash cycle described in the introduction to asset management ratios. With an increase in the average collection period, more dollars are being tied up in accounts receivable. This will slow the cash flow through your business. In addition, the increased level of accounts receivable relative to sales must be financed. If you keep accounts receivable at the same level while sales fall, you are financing a higher level of accounts receivable than you should. That costs money and reduces profitability.

Inventory turnover

Inventory is a critical area for many businesses. It can account for more than half of many small manufacturing and retailing firms' total asset investment. And, for most firms outside the service segment, it can account for half the current assets. Equally important, inventory is very sensitive to changes in business activity within the overall economy, the industry, or the individual firm. Inventory is also costly to carry and is a risky asset if you are in a business that is exposed to frequent obsolescence or style changes.

Inventory turnover, as a ratio, shows how fast your inventory or merchandise is moving. This ratio helps answer the question, "How efficiently and productively am I employing the company's assets?" This is why it is an asset management ratio.

Inventory management can be evaluated on the basis of the number of times inventory is turned over during a period, or by how many days' inventory the firm maintains at a given point in time. For overall management purposes, turnover is often used. When inventory is broken down by product or into raw material, work in process, and finished goods groups, both approaches (turnover and days inventory) are common.

Also known as: Stock turn; stock to sales

When to calculate: Monthly (Inventory turnover should be calculated monthly because the seasonal nature of most small businesses puts pressure on cash flow through inventory requirements, and frequent monitoring helps in planning.)

Where to find data: Cost of goods sold is found on the income statement; inventory is found on the balance sheet.

How to calculate: Divide cost of goods sold by inventory:

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Inventory}}$$

Cost of goods sold is the expense item which includes the purchase price of stock in a retail business, or total costs of goods for sale in a manufacturing firm (raw materials, labor, and overhead).

Inventory is the dollar amount on the balance sheet.

Form of answer: Times (that inventory turns over)

Example: (Based on the annual statements used in this book.)

$$\text{Inventory turnover} = \frac{180{,}000}{60{,}000} = 3 \text{ times}$$

This means that the company "turned" its inventories 3 times during the year — that is, it used up, through operations, merchandise or inventory totaling 3 times its average inventory investment. Another way of stating this is that the average inventory investment moved through the business (was bought and sold) three times during the year.

How to analyze the result: Usually, the higher the turnover, the better. A high turnover means that your company has been able to operate with a relatively small investment in inventory. It may also suggest that your inventories are current and salable; that, since they have not been on the shelves too long, they probably contain few unusable items. But almost anything can be overemphasized, and inventory turnover is no exception. You should carefully analyze the inventory turnover ratio. For example, a high ratio could indicate possible stockout problems. There are two forms of stockout. The first occurs when you do not have the goods a customer wants to buy. That can lead to customer dissatisfaction or lost revenue and profit when the customer goes to a competitor for the purchase. The second type of stockout occurs when production of goods is disrupted because of a lack of raw material inventory. Both forms of stockout can be costly. What, then, should your inventory turnover be? The desirable rate depends on your line of business, level of business activity (sales volume), method of valuing inventories, capital used to support inventory, and various trends. A study of the turnover rates of businesses similar to yours can help you answer the question. But remember that firms value inventory in different ways, and this affects their inventory turnover ratios. Keep valuation methods in mind when you compare your firm's turnover rate with that of others.

Inventory turnover is a much better management guide than the absolute size of the inventories. Size can be misleading. An increase in inventories, for instance, may represent the addition of stocks to support growing

sales. But it also might mean that merchandise is accumulating because sales have slowed down. In the first case, the inventory turnover remains the same or even increases; in the second case, it declines. Thus, if inventories begin to grow proportionately faster than sales, a declining turnover rate will warn the alert small business owner-manager that trouble is brewing. If inventories are increasing for sound reasons, the turnover will remain the same or improve.

Viewpoints: Nearly everyone evaluating your inventory management using turnover prefers a high ratio to a low one. The owner/stockholder, banker, and manager all view a high inventory turnover favorably, as long as stockouts are avoided.

But inventory turnover may be difficult to assess accurately from a position outside the firm. Outsiders do not have access to all the firm's operational and financial data, so they rely on the financial statements, which end on a specific date. Internal firm management can influence that date, and therefore the numbers. Also, many small firms attempt to minimize their tax liability by reducing inventory at the end of the tax period. They do this by pushing sales and delivery, while delaying inventory replenishment. Thus, inventories decrease, pushing up cost of goods sold. The result is a higher inventory turnover ratio, and one that probably does not fairly represent inventory turnover the rest of the year.

Adjustments and variations:

Average inventory adjustment. If your firm is experiencing even moderate growth, using the year-end inventory figure from the balance sheet may be misleading. It will produce a lower turnover rate than the one you actually experienced. The reason for this is that the cost of goods sold increases over the year and is cumulative, while the inventory is taken at a point in time. Since the level of inventory you maintain is a function of your current level of operations (sales), growth in sales will require a higher level of inventory at the end of the period than at the beginning. Therefore, it is advisable to use the average inventory for the period. The formulas to find average inventory turnover are:

$$\text{Average inventory} = \frac{\text{Beginning inventory} + \text{Ending inventory}}{2}$$

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

Sales variation. This variation of inventory turnover is found by the following formula:

$$\text{Inventory turnover} = \frac{\text{Sales}}{\text{Inventory}}$$

Some people use sales as the numerator in the formula instead of cost of goods sold, which can be misleading. Sales revenue is determined by the number of units sold and the price per unit. The cost per unit is very different from the selling price of each unit. Since most firms carry inventory on the balance sheet on a cost basis, it is more appropriate to use cost of goods sold than sales when determining inventory turnover.

This sales variation is frequently used by retailers instead of the basic inventory turnover ratio. Retailers frequently value inventory at retail price. Therefore, they want to compare inventory with sales, not cost of goods.

Days inventory variation. The method for finding this variation is:

$$\text{Days inventory} = \frac{\text{Inventory}}{\text{Sales}/365} = \frac{\text{Inventory}}{\text{Average daily sales}}$$

$$\text{or} = \frac{\text{Inventory}}{\text{Cost of goods sold}/365}$$

$$= \frac{\text{Inventory}}{\text{Average daily cost of goods sold}}$$

Days inventory represents the length of time you can go without replenishing inventory, or the average length of time capital is tied up in (invested in) inventory. Many manufacturing firms use this ratio to set safety stock levels, so that disruptions in supply will not shut down production. Retailers and wholesalers also set stock levels based on days inventory for the same reason. For example, days inventory of 49 means that you can go 49 days (from the date on which the ratio was calculated) before you run out of inventory. Days inventory is usually calculated weekly or monthly.

Inventory turnover by product variation. Inventory turnover records for individual items, groups of products, and product lines are also helpful, especially for retailers and wholesalers. They show which items are selling well and which are slow-moving. Such turnovers should be prepared monthly or, for products that are perishable or become obsolete quickly, on a perpetual or daily basis. This enables you to reorder fast-moving items in plenty of time and to prepare to dispose of slow-moving items before their value depreciates too far.

You can use the basic inventory turnover ratio or its adjustments and variations to track inventory turnover by product. Your accountant could suggest the most useful one for your business.

BUSINESS TIPS Inventory valuation methods

The three generally accepted methods for calculating the inventory cost portion of cost of goods sold (for the income statement) and inventory value (for the balance sheet) are: FIFO, LIFO, and AVERAGE COST. Under FIFO (first-in-first-out), you assume first shipment (or purchase) items are sold first, and then subsequent shipment items. Therefore, the cost of the first items bought is used first, then that of later shipments. Under LIFO (last-in-first-out), you make the opposite assumption — that the latest items purchased are sold before the earlier purchases of the same items. Therefore, the cost of the last items bought is used first, and then the cost of the older or previously purchased items. Average cost is a compromise between FIFO and LIFO. The cost of all purchases is averaged.

Let's see how each method of inventory valuation affects cost of goods sold. Assume that during the year, you made two purchases of 10 units each. The first time you bought the items they cost $5.00 each. The second time (later in the year), the price was $7.00 each. During the year, you bought 20 units of this item, but sold only 12. That leaves 8 units in current inventory. You now want to determine the inventory cost of the 12 units sold and the ending inventory for the balance sheet.

(To calculate ending inventory, add inventory purchases to your beginning inventory. Then subtract the cost of goods sold.)

Because you sold less than you purchased of this item, the different accounting methods produce different results. The inventory purchases portion of cost of goods sold is different under each method. Since LIFO yields the highest inventory cost in cost of goods, it will lower profits. So, if you opt for the inventory valuation method that produces the lowest profits and therefore the lowest taxes, LIFO is the method to use. It also yields the highest inventory turnover.

Inventory part of cost of goods during period

	FIFO	LIFO	Average cost
1st purchase	10 × $5 = $50	10 × $5 = $50	10 × $5 = $50
2nd purchase	10 × $7 = $70	10 × $7 = $70	10 × $7 = $70
Total inventory purchase	$120	$120	$120
Units sold	12	12	12
Inventory cost	10 × $5 = $50 2 × $7 = $14	10 × $7 = $70 2 × $5 = $10	12 × $6 = $72
Cost of goods sold	$64	$80	$72

Inventory balance at end of period

	FIFO	LIFO	Average cost
Beginning inventory	$20	$20	$20
Inventory purchases	$120	$120	$120
Cost of goods sold	$64	$80	$72
Ending inventory	$76	$60	$68

Notice that the price per unit of the second purchase was higher than the first. When prices are rising, LIFO is again an attractive valuation method because it lowers profits and minimizes tax liability. When prices are fairly stable, no method has a particular tax advantage.

For tax purposes, once you have selected an inventory valuation method, the Internal Revenue Service must approve any change to another method. You must also use the same method for tax purposes and financial reporting. You can't, for example, use LIFO for taxes and FIFO for financial reporting.

WHAT IF 12 **Sales and inventory increase.** Your business is doing well (sales are up) so you want to purchase more inventory. Your current supply is low, and you don't want to have stockout problems. Buying inventory will increase your inventory balance. Do you expect these changes to increase or decrease your inventory turnover ratio?

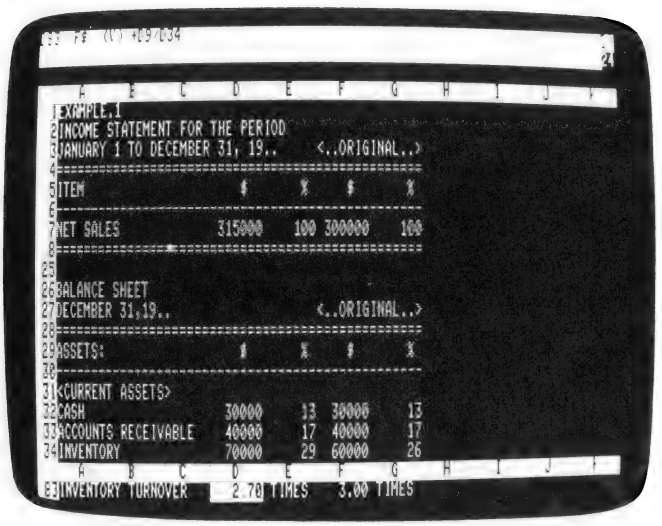
Begin by moving your cursor into the lower window and scrolling the screen so that row 83 (inventory turnover) is visible. (Note: Remember that in our example, cost of goods sold is set at 60% of net sales. Therefore, you'll only enter a change in net sales and the computer will calculate cost of goods sold.)

To enter

changes increasing net sales from its original $300,000 (changed to $270,000 in the previous "What If") to $315,000 and inventory from $60,000 to $70,000

Type >**D**(B)**7** and type **315000** (R)
>**D**(B)**34** and type **70000** (R)

Result Both cost of goods and inventory have increased, and inventory turnover falls from 3.00 to 2.70 times.



ANALYSIS Despite the better sales and the increased cost of goods that accompany it, the inventory turnover ratio declines. To justify a purchase of $10,000 of replacement inventory, the cost of goods sold must rise by more than $10,000. And, to maintain inventory turnover when inventory levels are increased, sales must move to a higher level than that simply covered by the increased cost of goods.

WHAT IF 13 **You buy ahead on inventory.** You have just been offered a great deal on an inventory item. You can buy a whole year's supply at 20% off the quoted market price. You'll have to spend $10,000, which means your inventory value will increase from $60,000 to $70,000. How will this change immediately affect your inventory turnover ratio? Remember, you haven't sold the inventory yet; you're buying ahead.

To restore

the example

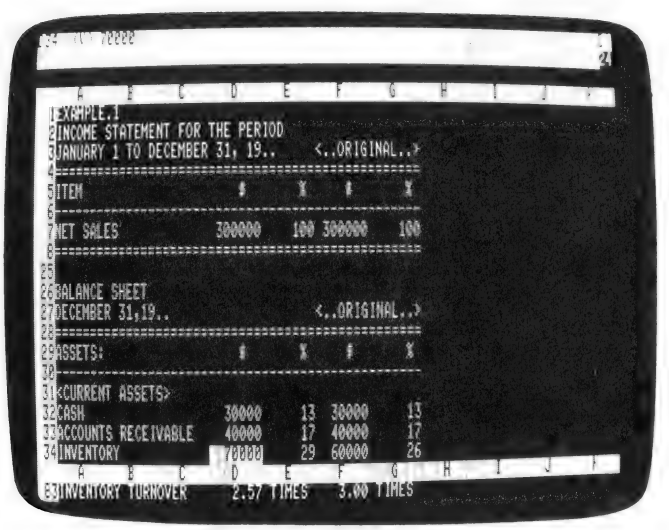
Type >**D**(B)**7** and type **300000** (R)

To enter

a change increasing inventory from its original $60,000 to $70,000 (This change should already have been made in the previous "What If.")

Type >**D**(B)**34** and type **70000** (R)

Result Inventory turnover decreases since sales and cost of goods sold haven't increased. The ratio falls to 2.57 times.



ANALYSIS Here you anticipate higher profits because of the lower cost of the inventory. With cost of goods lower next year, gross and net profit margins should be higher. But there may be hidden costs. You must come up with the $10,000 cash now, and you may also have to pay for storage space. If the inventory becomes obsolete before it is used, you'll have to write it off and take the loss. The immediate impact of buying ahead is a reduction in your inventory turnover ratio.

Safety/leverage ratios

Safety or leverage ratios measure a company's ability to meet its short- and long-term debt obligations, and how much of the company's assets are financed with debt. They reveal the equity cushion that is available to absorb any losses that may occur. These ratios are especially important to creditors or lenders outside the firm. Most outsiders are risk averters; that is, they would prefer less risk to more risk. To them, the safety ratios show the company's financial ability to weather a storm; they feel strong ratios reduce their risk position. The ratios also measure the amount of outside investment compared to owner or stockholder investment.

Owners also want to reduce their risk position. As an owner, you would rather use other people's money to generate profits for yourself. This is where the term *leverage* comes in. By substituting debt dollars (outsiders' money) for equity dollars (your money), you may make more money per dollar you invest than if you provide all the financing. So you leverage your investment with financing, usually in the form of a debt, from someone else. You give them some of the risk of your business.

Meanwhile, lenders or creditors are still concerned with the safety of their loans. They prefer that owners provide more financing for two reasons. First, owner financing indicates commitment to the business. Obviously, you are more careful and prudent if your own money is at stake. Second, the lower the level of outside debt, the less company earnings must be used to support interest payments and principal repayment. Therefore, lenders want a higher amount of owner investment. In the end, both want to reduce risk and increase gain, and both have to negotiate the best financing.

This family of ratios, then, can be viewed as a safety or leverage, depending upon your perspective. What an owner calls a leverage ratio, a lender may call a safety ratio. Safety ratios that indicate low risk make the lender more comfortable because they reassure him that he'll be able to "get out whole," should disaster strike the company. The owner generally prefers leverage ratios that reveal higher risk.

Three common safety/leverage ratios will be explained and explored in this chapter. They are: debt to worth (equity), times interest earned, and cash flow to current portion of long-term debt. As you'll see, all of these ratios are important in monitoring a company's performance.

Debt to worth (equity)

Debt to worth is one of the most common safety or leverage ratios. It shows how much debt a firm has relative to its net worth or equity. To the experienced analyst, this ratio is an indication of a company's ability to withstand adversity and meet its short- and long-term debt obligations.

It is important for the owner or manager of a firm to understand this ratio, because most lenders and creditors use it to gauge the overall riskiness of a business. Lenders think of debt to worth in the same way as a golf score — the lower, the better. A debt to worth ratio that is too high may limit your access to bank loans and supplier credit.

Also known as: Debt to equity; debt ratio

When to calculate: The debt to worth ratio should be calculated quarterly and annually. In very seasonal businesses, monthly computation is useful.

Where to find data: The balance sheet

How to calculate: Total liabilities are divided by net worth, or total owner equity:

$$\text{Debt to worth} = \frac{\text{Total liabilities}}{\text{Total owner equity}}$$

Total liabilities here means all debt: all current liabilities as well as long-term debt such as bonds and mortgages.

Net worth, or equity, includes all stock, paid in capital, and retained earnings. It may also include preferred stock.

Form of answer: A ratio of a number to 1

Example:

$$\text{Debt to worth} = \frac{100{,}000}{130{,}000} = .77 \text{ or } .77 \text{ to } 1$$

The ratio shows how many dollars of debt there are for every dollar of equity or net worth; here, there is $.77 of debt for every dollar of equity.

How to analyze the result: From an outsider's viewpoint, the general rule of thumb is that a business should maintain a one-to-one debt to worth ratio. Nevertheless, your type of business, the seasonality of sales and collections, and the length of time you have been in business will all have a bearing on the appropriate mix between debt and equity. The more stable your business and the longer you have been in operation (which should mean a higher retained earnings cushion), the higher the debt to worth ratio can be without increasing the riskiness of your company. For example, utility companies have been able to operate with relatively high debt to worth ratios (3 or 4 to 1) because their revenues and cash flows are very predictable and stable.

Viewpoints:

Owner/stockholder. These people typically prefer a high relative debt position; that is, a high debt to worth ratio. Their goal is to "leverage" their investment with the money of others, who will be paid a known return in

the form of interest, into profits for themselves. Here's an example of leverage.

Assume that your total assets are $100 and you expect to earn $50 before interest expense and taxes. Interest will be 20 percent on debt. Further assume that you can pay for your assets with any combination of liabilities (debt) and equity. What will be the difference between a high debt to worth ratio and a low one?

	High debt/worth (4:1) (Borrow funds)	Low debt/worth (1:4) (Stockholder investment)
Debt	$80	$20
Equity	20	80
Earnings before interest and taxes	50	50
— Interest (20%)	16	4
Before tax profit	34	46
Return on equity	170%	58%

It would appear that the higher the relative debt, the lower the profits. This is certainly true. But, for each dollar of equity you as the owner invest, you actually earn more with the high debt to worth ratio. With the figures above, you'd earn $1.70 for every dollar of the $20 you invest ($34 divided by $20), while the lower debt to worth ratio gives you $.58 for each dollar of the $80 you invest ($46 divided by $80). Stockholders generally prefer high debt to worth ratios. But there are limits. If debt reaches too high a level, it can place excessive strain on the company's ability to meet interest and repayment requirements. When this occurs, there is a question about whether the company will be earning profit which investors (stockholders) ultimately expect to be theirs.

Banker. Bankers recognize the importance of debt to owners. It is equally important that borrowers understand the objectives of the bank. A bank's first and most important objective is to protect the money depositors entrust to the bank. This is a rather large responsibility, and the reason why most bankers are considered conservative. Only after a bank is sure that its depositors are protected will it consider the potential profit from lending or investing. This means that the terms of a loan are secondary to the lender's belief that the loan will be a good one. It is why, for weaker customers, banks insist on collateral, higher interest rates, shorter maturities, personal guarantees, and so forth. It is little wonder that banks prefer lower debt to worth.

Manager. Again, the manager is caught in the middle trying to please both stockholders and lenders. The primary concern for the manager should be whether sufficient cash flow is being generated; whether enough cash is on hand to meet interest payments and principal repayments, as well as other obligations as they become due.

Since a manager is usually the person to approach lenders for loans, she or he needs to know how lenders evaluate potential customers. A reasonable debt to worth ratio is one criterion, but it is frequently only a starting point for further evaluation.

Keep in mind the maxim, "It is easier to borrow when you do not need the money than when you need it desperately." That means you should approach your banker before your needs are pressing. Think ahead and plan for your capital needs.

Adjustments and variations: The simple debt to worth ratio has a number of adjustments and variations. Most people evaluating your firm will make certain ratio adjustments to get a clearer picture of the firm's situation. Knowing these variations and adjustments, you'll be better prepared to discuss your business with them.

Intangible assets adjustment. One of the most common adjustments is to "back out" or subtract the value of intangible assets from equity. Intangible assets are those which are nonphysical in nature, such as goodwill, patents, or leasehold improvements. For small firms that don't own facilities, or firms in the engineering or research and development (R & D) fields, this adjustment can have a significant bearing. In our example, if the debt to worth ratio is adjusted for intangibles (other assets), it increases from .76:1 to .83:1.

Notes payable adjustment. Another adjustment outsiders will make, particularly in the case of small or closely-held companies, is to remove (or subordinate) notes payable held by stockholders or owners from the total liabilities. It is fairly common for owners to lend their own money to the business on an unsecured basis. These owner loans are subordinated loans, which means that any lender with a higher claim on assets will be paid before the owner. Therefore, a lender or creditor will regard the owner loans as an owner (equity) investment. So removing or subordinating owner loans to the business decreases the total liabilities by the amount of the loans and, at the same time, increases equity by the same amount.

In our example, the notes payable adjustment causes the debt to worth ratio to decrease from .76:1 to .64:1. Obviously, this adjustment improves a banker's safety position. If, as an owner, you make loans to your business, it may be to your advantage to make this adjustment in the debt to worth ratio and point it out to your banker.

Hidden assets adjustment. A final adjustment to be considered involves "hidden assets." Hidden assets are those with a market value clearly higher than the value at

which they are carried on a balance sheet. These assets are typically buildings or other facilities listed at a depreciated value for accounting and tax purposes. The hidden asset adjustment is calculated by:

$$\text{Debt to worth} = \frac{\text{Total liabilities}}{\text{Total equity + Hidden assets}}$$

In our example, assume that the appraised market value of total fixed assets is $180,000, while the value on the books (at cost less accumulated depreciation) is $80,000. Since total assets must equal total liabilities plus total equity for the balance sheet to balance, total equity must increase by the value of the hidden assets, or $100,000 ($180,000 − $80,000). The hidden assets adjustment causes the debt to worth ratio to decline to .43:1 from .73:1.

Adding or noting hidden assets is obviously to your advantage when you deal with a banker, but you should first obtain a professional appraisal to substantiate the higher asset value.

These three adjustments are fairly common. While the intangible assets adjustment works to your disadvantage (i.e., it increases your debt/worth ratio), the other two actually improve your company's safety position from the creditor's and banker's perspectives.

There are also a number of variations of the debt to worth ratio. Generally, they allow you to view your leverage position in slightly different ways, and add information that is useful from both the owner/manager's and banker's viewpoints.

Debt to total assets variation. (Also known as the debt ratio and the debt to asset ratio.) This ratio is often used as a substitute for the debt to worth ratio. Remember that total assets equals total liabilities plus total owner equity. The debt to total assets ratio tells you directly how much of your asset base is financed with debt. In our example, the debt to total assets ratio is 43 percent. In other words, 43 percent of our assets are financed by all forms of debt or liabilities. The other 57 percent is funded by equity.

It is easy to convert the debt to worth ratio to the debt to total assets ratio by applying the following formula:

$$\text{Debt to total assets} = \frac{\text{Debt to worth}}{1 + \text{Debt to worth}}$$

$$\text{For example:} \quad \frac{.77}{1 + .77} = .43, \text{ or } 43\%$$

Current liabilites to total assets variation. This refinement of the debt to total asset ratio shows how much of your total assets are funded by short-term or current liabilities. The ratio in our example is 26 percent.

Long-term liabilities to total assets variation. (Also known as long-term debt to total capitalization.) This ratio shows how much of your total assets base is funded by long-term debt. The ratio for our example is 17 percent.

The debt to total assets ratio is the sum of the current liabilities to total assets ratio and the long-term liabilities to total assets ratio. Using the figures given under these last two variations, the debt to total assets ratio = 26% + 17% = 43%.

The last two variations allow you to evaluate the relative portion of short- versus long-term liabilities that you are using to finance your business. If you are borrowing a lot of money in the form of notes payable (under current liabilities), and this makes up a large portion of your total borrowing, you may be increasing the riskiness of your firm. Short-term borrowing (seasonal or demand loans) must be "rolled over," or renewed. If you have a bad year, the bank might not be willing to renew the seasonal loan and may call the demand note. On the other hand, if your borrowing is primarily long-term in nature, you must be prepared to repay the principal of the loan at maturity and must build up sufficient cash for this purpose. The alternative of renewing or refinancing that long-term debt does exist, but if the amount is large, your firm's performance and financial condition just prior to the loan's maturity will be very important.

Since bank loans are frequently an important source of financing for a small firm, a few additional comments are in order.

Since the first objective of a bank is to avoid risk, the debt to worth ratio is often the first ratio bankers examine when evaluating a business. They use the ratio as one index in making loan decisions. But, the length or term of the loan request is another important factor. Short-term loans, whether they are 90-day notes, seasonal loans, or demand notes, are designed to be self-liquidating. This means that they are granted by the lender in advance of your peak selling season so that the profits and higher cash flow generated during this period can be used to pay off the loans. Long-term loans are made with the assumption that future profits will be used to satisfy interest and principal payments. Often bankers want a lower debt to worth ratio for a long-term loan than they do for a short-term one.

Think of your business as a boat. The longer the term of the loan you ask the bank for, the stronger the banker wants the boat (your business) to be, which means a lower debt to worth ratio. On a long voyage (during the period of a long-term loan), a lot of unforeseen problems can occur. Bankers want to know that the boat — your business — can cope with such events and weather any storms that might arise. But on a short voy-

age (a short-term loan), the bank is more apt to take a chance on a vessel that is not quite as sturdy.

A bank can live with excessive debt to worth in a company, if the company's ratio trend is in the right direction (getting lower) and it has sufficient collateral and profits (cash flow).

Other terms for a firm that has a high debt to worth ratio include highly leveraged, undercapitalized, and overextended.

BUSINESS TIPS Types of debt

There are basically four types of debt a firm can have: self-liquidating debt; demand loans; term loans; and long-term debt.

Self-liquidating debt is made up of those obligations that arise during the normal course of business, such as accounts payable, wages due, and taxes due. They usually vary with the level of sales activity. As a result, self-liquidating debts are sometimes thought of as spontaneously generated forms of debt and financing for a firm, and they are usually paid off during the normal course of business.

Demand loans may not have a specific due date, but they do have a number of conditions. If those conditions are not met, the loan will be called in, or demanded. Common conditions (often called restrictive covenants) can include a minimum level of working capital, a minimum current ratio (as an index of liquidity), or a maximum level of debt.

Term loans have a specified due date, and are often seasonal loans. For example, you might get a term loan to stock up on inventory for the coming sales season.

Long-term debt is normally carried by a company for a year or more, and includes financing for real estate or equipment. Usually, long-term debt terms also contain certain restrictions to help protect the lender's investment.

Companies often have a mix of debts, and lenders may inquire about the make-up of that mix. More specifically, they may want to know if their loan is subordinated to another loan. A **subordinated loan** means that if a company fails, the subordinated debt holder receives nothing until all senior, or unsubordinated, debt holders are paid back. Being a subordinated debt holder is like being in second, third, or fourth place in the debt-pay-back line. To avoid that situation, a lender may ask that a loan be secured (made safe or backed) by a company's accounts receivable or inventory. Or lenders of demand loans (a type of loan that is unsecured) may build in a loan clause that gives them second claim on certain company assets. In evaluating the safety of their individual loans, lenders also look at the general debt and loan mix of a company.

What if your leverage situation changes?

WHAT IF 14 **A 90-day loan is arranged at the bank.** Assume that cash is getting tight as you enter your peak selling season. To remedy this situation, the bank agrees to lend you $20,000 on a 90-day note. This will cause your notes payable, part of other current liabilities, to increase from $20,000 to $40,000. Until you spend the amount of the loan, your cash account will also increase by $20,000. What will be the immediate impact of the loan on your company's leverage position, and how will the bank view this position?

Begin by moving your cursor into the lower window and scrolling the screen so that row 87 (the debt to worth ratio) is visible. Then return the cursor to the upper window.

To restore

the example

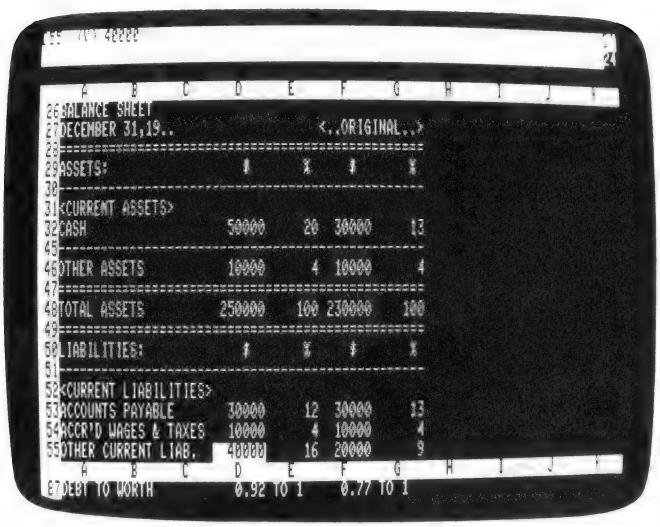
Type >**D**(B)**34** and type **60000** (R)

To enter

changes increasing cash from $30,000 to $50,000 and other current liabilities from $20,000 to $40,000

Type >**D**(B)**32** and type **50000** (R)
>**D**(B)**55** and type **40000** (R)

Result The debt to worth ratio increases from .77:1 to .92:1. This means that you now have 92 cents of debt for every dollar of equity.



ANALYSIS The notes payable increase of $20,000 causes current and total liabilities to increase by the same amount. Meanwhile, equity doesn't change, so the leverage position, as measured by the debt to equity ratio, increases.

Bankers view the debt to equity ratio as a safety ratio, so generally they don't want to see it increase. But the loan is short-term, and they'll probably view the ratio rise as temporary. If they're convinced you can pay off the note at the end of the ninety days, and the debt to equity ratio (after financing) is within acceptable limits, they will approve the loan.

WHAT IF 15 **A long-term loan is arranged at the bank.** Now assume that instead of obtaining a short-term loan (note), you ask for a long-term loan to finance the purchase of equipment. You need $20,000.

To restore

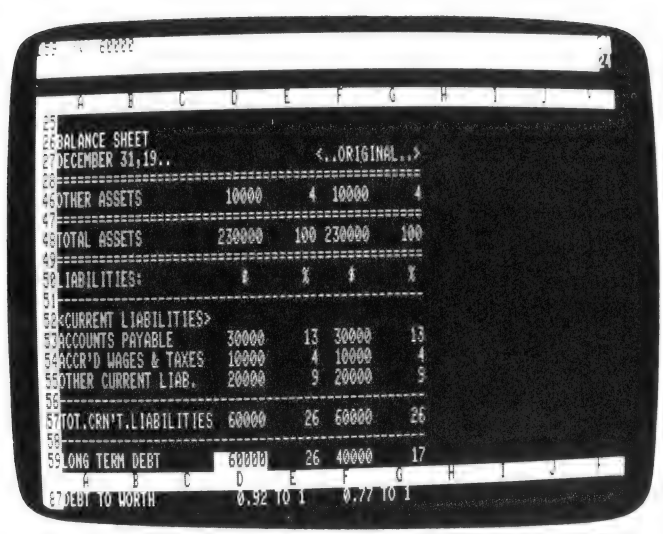
the example

Type >**D**(B)**32** and type **30000** (R)
>**D**(B)**55** and type **20000** (R)

To enter

a change in long-term debt from $40,000 to $60,000

Type >**D**(B)**59** and type **60000** (R)



Result The debt to worth ratio increases from .77:1 to .92:1.

ANALYSIS A different type of financing (long- vs. short-term) caused the same ratio change in this example as 55 the previous "What If." But the type of financing requested can make a difference in the bank's approval of it. A long-term loan represents a long-term commitment on the part of the lender. Therefore, bankers will review a request for long-term financing more carefully than a request for short-term financing. They'll take a close look at the financial projections you provide with the loan request. Financial projections are likely to be more accurate for a short period of time than for a long period of time. For the lender to feel comfortable, the firm must show that it anticipates continued profits. These profits will increase retained earnings and gradually reduce the debt to worth ratio.

WHAT IF 16 **Profits are retained in the firm.** Now consider a situation where sales and net income are up, while debt hasn't increased. You can retain the money in the firm, distribute it to stockholders, or implement some combination of both. Before you decide, you want to explore the effect of retaining the earnings in the firm. Will this significantly improve your safety/leverage position?

To restore

the example

Type >**D**(B)**59** and type **40000** (R)

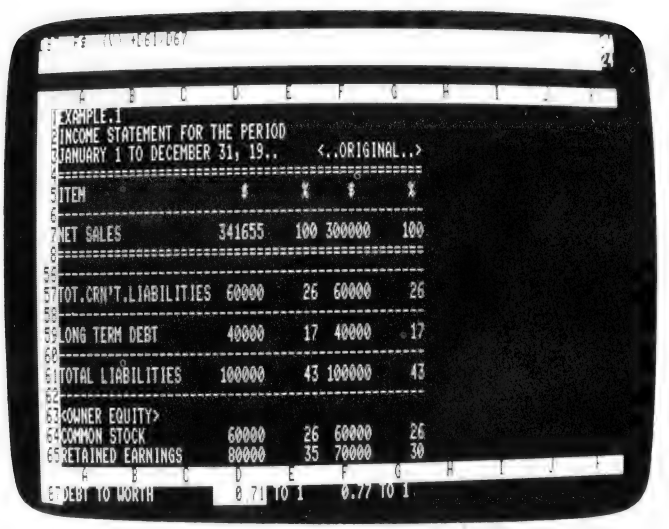
To enter

a change increasing net sales from $300,000 to $341,655, which results in a change in net income from $24,000 to $34,000, and an increase in retained earnings from $70,000 to $80,000

Type >**D**(B)**7** and type **341655** (R)
>**D**(B)**65** and type **80000** (R)

Result Debt to worth decreases from .77:1 to .71:1. You now have 71 cents of debt for every dollar of equity — a change of 6 cents less for every dollar.

ANALYSIS Retained profits can decrease your debt position, as shown in the decreased debt to worth ratio. Since the additional income is not paid out as dividends, retained earnings increases by $10,000, from $70,000 to $80,000. This pushes total owner equity up from $130,000 to $140,000. Since there was no change in total liabilities, the debt to equity ratio declines. This will be viewed as a positive trend by lenders and creditors.


EXAMPLE.1
INCOME STATEMENT FOR THE PERIOD
JANUARY 1 TO DECEMBER 31, 19..
<..ORIGINAL..>
ITEM $ % $ %
NET SALES 341655 100 300000 100
TOT.CRN'T.LIABILITIES 60000 26 60000 26
LONG TERM DEBT 40000 17 40000 17
TOTAL LIABILITIES 100000 43 100000 43
<OWNER EQUITY>
COMMON STOCK 60000 26 60000 26
RETAINED EARNINGS 80000 35 70000 30
DEBT TO WORTH 0.71 TO 1 0.77 TO 1

A word about profits is in order at this point, since profits can provide the basis for equity in a business. There is little question that most small firms seek to minimize their tax liabilities and payments in a legal and accepted manner. That is, action is taken to report the lowest possible profits to pay the lowest possible taxes. But this still means lower profits. And lower profits means lower retained earnings (and a higher debt to worth ratio). There is the dilemma. Profits and retained earnings provide the equity base of most firms, the cushion of safety from the bank's perspective. Failure or reluctance to show profit, pay taxes, and add to equity can stifle future growth and jeopardize continued bank support.

Times interest earned

While the debt to worth ratio and its variations are useful in determining the safety or leverage of your company, they do not address the critical question, "How will the interest and principal on loans be repaid and when?" The times interest earned ratio does answer part of that question. It directly measures a company's ability to meet interest payments, and indirectly assesses whether or not the principal repayment is at risk. This ratio, then, is of obvious interest to lenders and bankers.

Generally, a company with sufficient operating income can meet its interest obligations. Therefore, operating income is the numerator in this ratio, with interest as the denominator.

Also known as: Interest coverage ratio

When to calculate: Monthly

Where to find data: Income statement

How to calculate: Operating income is divided by interest costs:

$$\text{Times interest earned} = \frac{\text{Operating income}}{\text{Interest expense}}$$

Operating income is the result of subtracting cost of goods sold and operating expenses from sales revenue. Note that interest expense is *not* deducted.

Interest expense is the interest the firm pays on outstanding loans.

Form of answer: Times (that interest expense can be covered)

Example:

$$\text{Times interest earned} = \frac{\$46{,}000}{\$5{,}000} = 9.2 \text{ times}$$

Times interest earned means the number of times you can cover your interest payments with funds from operations, or operating income. Here, operating income can cover the interest expenses 9.2 times.

How to analyze the result: From any viewpoint, the desirable direction for the times interest earned ratio is up. A high, stable ratio indicates there are sufficient profits and cash being generated by the operations of the firm to satisfy the interest expense requirements of existing debt. Low or fluctuating times interest earned ratios reflect instability and the potential inability to meet interest expenses.

The greater the fluctuation in operating income during a year, the more important the times interest earned ratio becomes. Seasonal businesses are characterized by these fluctuations, and they should aim for a ratio of 2 (times) during the slower periods of their operating cycles. These companies may, however, sometimes miss the mark, and actually have a negative times interest earned ratio in months that show a loss. At these times, they need short-term or seasonal financing.

Notice that in our example the times interest earned ratio is calculated on a historical basis. What happened in the past is not as important as what is expected to happen in the future. While a historical ratio might be important if you have long-term debt, most lenders will be concerned with your projected ability to service their debt . . . and so should you.

When you ask for a loan, you will usually provide projected financial statements. The lender will then calculate ratios, such as times interest earned, based on your projections.

These projections and your historical statements will form a large part of the basis of a lender's decision to make or not make the loan.

Viewpoints:

Owner/stockholder. Owners are less concerned than bankers about a high times interest earned ratio. An owner may believe that a ratio of 5 times is perfectly adequate, while a banker may prefer a ratio of 7.9, or 12 times. Owners, of course, want the company to meet its interest obligations, but they don't require as great a degree of reassurance about that ability as the banker does.

Banker. Bankers have an obvious vested interest in a fairly high times interest earned ratio. They must be assured that interest payments will be met. Otherwise, the bank has a non-earning asset (the loan made to the company), and it has put its depositors' money at risk.

Manager. The manager has to run the company so that it can meet the times interest earned requirements that a bank may impose on the company through the convents of a loan or the restrictions on it. If the company has a seasonal sales pattern, the times interest earned ratio can fluctuate from month to month. Therefore, it is critical that the manager be sure there is sufficient operating income to meet interest obligations during the weakest part of the sales year.

Adjustments and variations:

Depreciation adjustment. One common adjustment to the times interest earned ratio is to subtract depreciation from operating expenses, which will increase operating (cash) income. Or, putting it another way, you add the amount of the period's depreciation to the operating income. Since depreciation is a non-cash expense, it may cause operating (cash) income to be understated. If operating income reflects cash flow, and it does over the long haul, then adding depreciation to operating income gives the amount of cash generated during a period. Since interest payments must come from cash, this depreciation adjustment more accurately reflects a company's debt-servicing ability. This can be particularly important for

growing firms that are adding fixed assets and depreciating them under accelerated terms.

In our example, the depreciation adjustment causes the times interest earned ratio to increase from 9.2 times to 12.2 times. It tightens up, or strengthens, the times interest earned ratio.

Fixed charge coverage ratios variation. Firms often have more fixed obligations than just interest payments. Additional obligations could include lease payments, principal repayments, and preferred stock dividends. The fixed charge coverage ratios measure the ability of operating income to meet fixed expenses. A ratio can be calculated on the basis of one fixed charge, such as lease payments, or on the basis of a number of fixed charges. We'll illustrate a fixed charge coverage ratio for two fixed charges: lease payments and interest.

The ratio is calculated the same as times interest earned, *except* that lease payments are added to the numerator and denominator of the equation.

$$\text{Fixed charge coverage} = \frac{\text{Operating income + Lease payments}}{\text{Interest + Lease payments}}$$

Lease payments are total payments for the period.

Interest is total interest expense, taken from the income statement.

For example, assume $10,000 of G & A expenses are for lease payments. Then:

$$\text{Fixed charge coverage} = \frac{\$46{,}000 + \$10{,}000}{\$5{,}000 + \$10{,}000} = 3.73 \text{ times}$$

This means that operating income can cover 3.73 times the fixed charge of lease and interest payments.

Creditors and lenders will use this fixed charge coverage ratio (and other variations) to assess the safety of extending credit or making a loan.

WHAT IF 17 **A loan is paid off.** What happens to the times interest earned ratio if you pay off a high-interest loan, a loan of $10,000 at 18% interest?

Begin by moving your cursor into the lower window and scrolling the display so that row 88 (times interest earned) is visible. Then return the cursor to the upper window.

To restore

the example

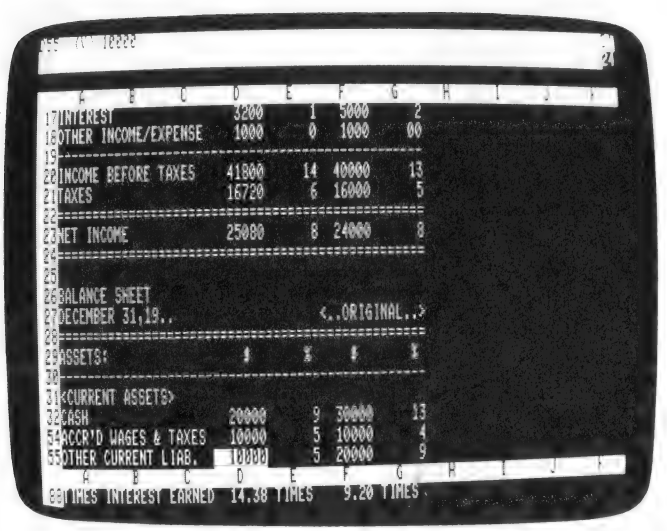
Type >**D**(B)**7** and type **300000** (R)
>**D**(B)**65** and type **70000** (R)

To enter

a change in interest paid from $5,000 to $3,200
a change in cash from $30,000 to $20,000
a change in other current liabilities from $20,000 to $10,000

Type >**D**(B)**17** and type **3200** (R)
>**D**(B)**32** and type **20000** (R)
>**D**(B)**55** and type **10000** (R)

Result The times interest earned increases from 9.2 times to 14.38 times.


17 INTEREST 3200 1 5000 2
18 OTHER INCOME/EXPENSE 1000 0 1000 00
20 INCOME BEFORE TAXES 41800 14 40000 13
21 TAXES 16720 6 16000 5
23 NET INCOME 25080 8 24000 8
26 BALANCE SHEET
27 DECEMBER 31,19.. <..ORIGINAL..>
29 ASSETS: $ % $ %
31 <CURRENT ASSETS>
32 CASH 20000 9 30000 13
54 ACCR'D WAGES & TAXES 10000 5 10000 4
55 OTHER CURRENT LIAB. 10000 5 20000 9
88 TIMES INTEREST EARNED 14.38 TIMES 9.20 TIMES

ANALYSIS The net effect of paying off the loan is to increase the times interest earned ratio, and increase income before taxes by $1,800 (due to lower interest expense). The debt to worth ratio decreases from .77 to 1 to .69 to 1 (from elimination of $10,000 of debt and the increase of net income and retained earnings by $1,800). But the increased liquidity, as measured by the increase in the current ratio from 2.33 to 2.6, may be deceptive. To pay off the loan, $10,000 of cash was used. And that might put the firm in a tight cash position, even to the point of negating the positive signals given by the debt to worth and times interest earned ratios.

WHAT IF 18 **Interest increases.** You have the opportunity to bid on a contract that will require an additional $10,000 in inventory. But you do not want to pay for the inventory out of cash, and the terms offered by your supplier would not reflect the period in which you will use the inventory. You decide to take out a one-year loan from the bank for $10,000, at 18 percent. Will this have a significant impact on your ability to meet total interest obligations in the immediate future?

To restore

the example

Type >**D**(B)**32** and type **30000** (R)
>**D**(B)**55** and type **20000** (R)

To enter

a change in interest increasing it to $6,800, an increase in other current liabilities from $20,000 to $30,000, and an increase in inventory from $60,000 to $70,000

Type >**D**(B)**17** and type **6800** (R)
>**D**(B)**34** and type **70000** (R)
>**D**(B)**55** and type **30000** (R)

Result The times interest earned ratio decreases from 9.2 times to 6.76 times.

ANALYSIS Until the profits and resulting cash flow from the contract are realized, your ability to meet interest payments is reduced by slightly more than 25 percent. Your times interest earned is getting a little on the low side. That much of a reduction may cause your lender to be a little concerned. But, since no bank relies on one indicator alone, a banker will look at other factors as well. Two such factors might be your current ratio and your debt to equity ratio. In our example, the current ratio declines from 2.33 to 2.14 and the debt to worth ratio increases from .77:1 to .85:1. All three ratios are moving in an undesirable direction.

But the higher debt to equity ratio and lower current and times interest earned ratios are the immediate effect of the contract and loan. If you can convince your bank that these are temporary and show cash flow, P&L, and balance sheet projections that indicate your financial performance and condition will return to normal or improve over the course of the loan, your chances of getting the loan improve. The key here is the assumption that the deterioration in financial performance and condition is temporary.

WHAT IF 19 **You arrange a loan to support an expected sales increase.** Suppose you want the same loan as in the previous "What If," $10,000 at 18 percent, but you expect a sales increase of $20,000. Are the additional sales sufficient to cover the additional interest expense and maintain your times interest earned ratio at 9.2 times?

To enter

changes in net sales from $300,000 to $320,000, interest from $5,000 to $6,800, inventory from $60,000 to $70,000 and other current liabilities from $20,000 to $30,000 (You may have already changed interest in the previous "What If.")

Type >**D**(B)**7** and type **320000** (R)
>**D**(B)**17** and type **6800** (R)
>**D**(B)**34** and type **70000** (R)
>**D**(B)**55** and type **30000** (R)

Result With a sales increase of $20,000, net income rises from $24,000 to $27,720. The times interest earned ratio declines from its original 9.2 to 7.94. But the ratio is slightly higher than the one in the previous "What If," where the same interest was required with lower sales and profits.

ANALYSIS The additional interest expense is only partially offset by the increased sales and operating profit. Certainly your bank will view this type of application more favorably than one that does not show an increase in sales. But your firm's financial performance and condition has still deteriorated. Profits are higher but the critical question is whether you and your banker will consider the firm's condition and performance to be within acceptable limits, given the loan and additional sales.

Cash flow to current portion of long-term debt

The cash flow to current portion of long-term debt (CF/CPLTD) ratio assesses whether the cash flow generated from operations is sufficient to make the long-term debt repayments that are due within 12 months. These can include term money and all non-self-liquidating debt; all repayments of principal on a loan. Like the times interest earned and debt to worth ratios, cash flow to current portion of long-term debt is most useful and informative when applied to financial projections (expected income and debt) and not to historical statements, which show past income and debt. (Of course, projections are forecasts about the future and not factual information about the future; conditions can change and render the forecasts inaccurate.)

When to calculate: Monthly

Where to find data: Net income and depreciation are found on the income statement; current portion of long-term debt is found on the balance sheet.

How to calculate: Cash flow is divided by current long-term debt:

$$\text{CF/CPLTD} = \frac{\text{Net income + Depreciation}}{\text{Current portion of long-term debt}}$$

Net income plus depreciation approximates the after-tax cash flow available to pay off debt. After-tax cash flow is used because principal repayment is not a tax-deductible cash outflow or expense.

Current portion (or current maturity) of long-term debt is that amount of long-term debt which must be paid within the next year or accounting period.

Form of answer: Times (that cash flow covers maturing debt, or the number of dollars available to pay off each dollar of debt to be repaid).

Example:

$$\text{CF/CPLTD} = \frac{\$24{,}000 + \$15{,}000}{\$10{,}000^*} = 3.9 \text{ times}$$

(* We assume that $10,000 of other current liabilities is current maturity of long-term debt.) There are 3.9 dollars available to pay off each dollar of maturing debt.

How to analyze the result: Like the times interest earned ratio, cash flow to current portion of long-term debt assesses a firm's ability to service debt, in particular, principal repayment, from earnings. Generally you want a ratio of 2 to 3 times. While a ratio of 1 time is all that is necessary to pay off the debt, the company must continue to operate and spend cash elsewhere. A value above 2 times allows this. If the ratio is less than 1 time, it usually means that repayment will come at the expense of working capital unless additional term money or capital is obtained. Most growing businesses find that they must replace their long-term debt to avoid cash (or working-capital) crises. They renew, or roll over, the debt and often increase its amount to allow for continued growth.

Viewpoints:

Owner. As the stockholder or owner, you would use this ratio to assess risk to cash flow and the firm's ability to meet principal payments on debt. The lower the ratio, the harder it is to meet the debt payments. If this difficulty is revealed by the financial statement through the CF/CPLTD, lenders will be reluctant to renew debt and advance additional loans to help support the necessary increase in assets required for growth, sales, and income. So a low CF/CPLTD ratio may indicate an inability to grow, and can place the firm at a competitive disadvantage.

Banker. Bankers view this ratio as critical in monitoring a long-term loan and determining whether to extend a new loan. They want assurance that a company can meet its interest obligations (measured by the times interest earned ratio) and pay any principal due on a loan. The CP/CPLTD ratio gives bankers a fairly quick and fairly good indication of a company's ability to make those payments.

Good lending officers know that debt service (including interest payments and principal repayment) can be

such a high burden that it will place a firm on the brink of bankruptcy. They also recognize that if the business is well run and growing, equity will be built up each year through additional retained earnings. It is not unheard of for the lender to suggest a different loan structure from the one management proposes. For example, you may have in mind a ten-year mortgage loan for the purchase of equipment. Both interest and principal would be paid periodically, so that at the end of ten years the loan balance would be zero. The lender might suggest a term loan (secured by the equipment) under which interest payments are made on a periodic basis but principal is not paid back until the end of the ten years. The major advantage of the term loan is that total debt service expenses include only the interest payments. The equipment purchased is not going to produce immediate increases in sales and income. But it will generate additional sales and income over the life of the equipment and loan. In this way the loan principal can be paid off at the end of the ten years.

Manager. The manager must insure that there is sufficient cash flow to minimize the risk of both interest and principal payment default and to support future firm growth. Otherwise, the company is in jeopardy. The manager must anticipate major outflows of cash and know where the money is going to come from. That means planning. For instance, some forms of long-term debt are not paid off on a regular basis. Suddenly (or it may seem so) the whole debt is due at once. The CF/CPLTD ratio may appear acceptable until a year before a loan is due, and then it will take a jump. The manager must anticipate that situation.

Adjustments and variations: Like most ratios, the CF/CPLTD has a number of possible adjustments and variations. The adjustments made depend upon who is using the ratio. Keep in mind that the user of any ratio has a specific purpose. But all use ratios to assess the firm from their perspectives.

Expense adjustment. Adjustments are often made to the expense area of the income figure. The owner's personal expenses, which are usually discretionary, can be added to net income. Owners and lenders may make this adjustment before calculating the ratio. The formula would be:

$$\text{CF/CPLTD} = \frac{\text{Net income + Personal expenses + Depreciation}}{\text{Current portion of long-term debt}}$$

For example, assume you have $4,000 of personal owner expense. The adjusted ratio is calculated by:

$$\text{CF/CPLTD} = \frac{\$24{,}000 + \$4{,}000 + \$15{,}000}{\$10{,}000} = 4.3$$

That means you now have $4.30 available to pay off each dollar of maturing debt. Remember that the CF/CPLTD, without this adjustment, was 3.9.

The expense adjustment almost always increases the ratio, so owners and lenders use it to get a more accurate gauge of how well cash flow covers debt that is due. But it is based on two assumptions. First, the personal expenses are not necessary to the efficient and profitable functioning of the business. And second, the owner has the discipline to eliminate the expenses when cash gets tight.

Debt adjustment. The CF/CPLTD ratio does have its critics. One of the major criticisms of the ratio is that only a portion of debt is included in the ratio.

This criticism can be eliminated by including *all* debt that is due within the next year. For example, if you have $10,000 due on long-term debt and $10,000 due on notes payable, you could calculate the ratio as follows:

$$\text{CF/CPLTD} = \frac{\text{Net income + Depreciation}}{\text{CPLTD + Notes due + Demand loans}}$$

Example:

$$\frac{\$24{,}000 + \$15{,}000}{\$10{,}000 + \$10{,}000} = 1.95 \text{ times}$$

With the debt adjustment, the ratio in our example drops to 1.95 times from 3.9 times. This occurs because the denominator (debts) increases 100%.

This debt adjustment always reduces the ratio, so it is one of the more stringent versions of CF/CPLTD. Lenders may use this adjustment. Owners usually don't, unless they think the firm is in trouble.

WHAT IF 20 **The current portion of long-term debt increases and profits remain the same.** What will happen to the cash flow to current portion of long-term debt ratio if the current portion of long-term debt increases from $10,000 to $20,000, while net profit and depreciation expense remain the same?

For this and the following "What Ifs," assume that the current portion of long-term debt is included on our abbreviated statement under other current liabilities.

Begin by moving your cursor into the lower window and scrolling the display so that row 89 (cash flow to current portion of long-term debt) is visible. Then return the cursor to the upper window.

To restore

the example

Type >**D**(B)**7** and type **300000** (R)
>**D**(B)**17** and type **5000** (R)
>**D**(B)**34** and type **60000** (R)
>**D**(B)**55** and type **20000** (R)

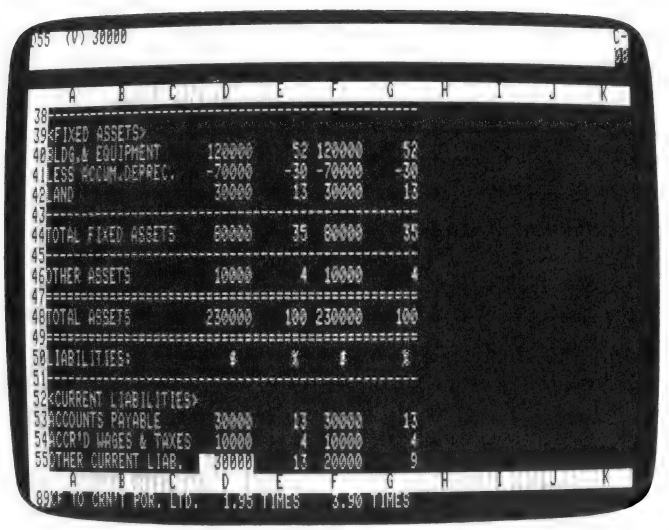
To enter

a change in the current portion of long-term debt under other current liabilities from $20,000 to $30,000

Type >**D**(B)**55** and type **30000** (R)

Result The cash flow to current portion of long-term debt ratio falls from 3.9 to 1.95 times.

ANALYSIS The drop in the ratio means you are now less able to pay off the current portion of your long-term debt than you were, although 1.95 times is an adequate figure, under ordinary circumstances. An unexpected decrease in sales, accompanied by a lot of long-term loans due, however, could mean disaster.



For example, a ski retailer is likely to have her sales concentrated at the beginning and middle of the winter. She has seasonal sales and seasonal profits. If there is no snow (and therefore no sales and no profits), and a portion of her long-term debt must be repaid at the end of the peak season, the business could be in serious trouble.

Notice that the cash flow to current portion of long-term debt ratio measures your ability to generate cash flow, which can be used to pay off the current portion of long-term debt principal. This implies that cash flow will accumulate in the cash account to pay off the principal.

Having a reasonable cash flow to current portion of long-term debt ratio does not necessarily mean that you will be able to meet principal repayment obligations. In order for repayment to take place, there must be sufficient cash accumulated in the cash account not only to make the payments but also to continue the normal operations of the firm. If there isn't, you may find yourself in a cash crisis even though you can repay your debts.

WHAT IF 21 **The current portion of long-term debt remains the same and sales and profits increase.** Now assume that sales increase by $25,000 or 8 percent over the next year. Current portion of long-term debt, interest expense, other income/expense, and tax rate don't change. Will this improve your ability to service the principal repayment on long-term debt?

To restore

the example

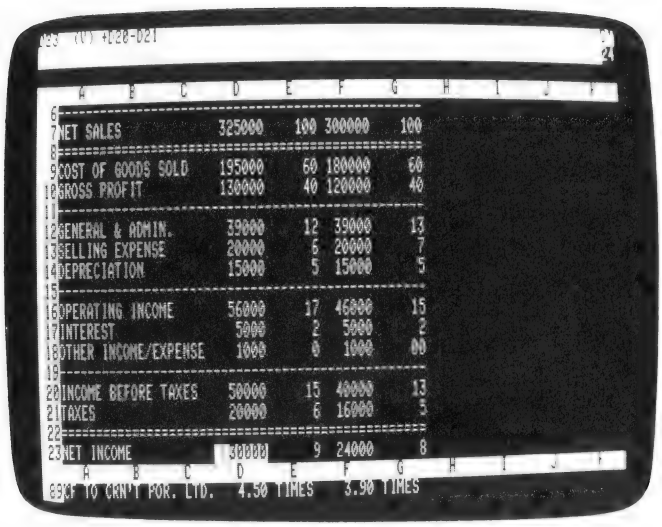
Type >**D**(B)**55** and type **20000** (R)

To enter

a change in net sales of $25,000 from $300,000 to $325,000, which increases net income to $30,000

Type >**D**(B)**7** and type **325000** (R)

Result There is an increase in the ratio from 3.9 to 4.5 times, an increase of 15 percent.


NET SALES 325000 100 300000 100
COST OF GOODS SOLD 195000 60 180000 60
GROSS PROFIT 130000 40 120000 40
GENERAL & ADMIN. 39000 12 39000 13
SELLING EXPENSE 20000 6 20000 7
DEPRECIATION 15000 5 15000 5
OPERATING INCOME 56000 17 46000 15
INTEREST 5000 2 5000 2
OTHER INCOME/EXPENSE 1000 0 1000 00
INCOME BEFORE TAXES 50000 15 40000 13
TAXES 20000 6 16000 5
NET INCOME 30000 9 24000 8
CF TO CRN'T POR. LTD. 4.50 TIMES 3.90 TIMES

ANALYSIS An 8-percent sales increase means that you expect sales to be $325,000 for the next year. Based on that assumption, your income statement (the example) would look like this:

Sales	$325,000	
Operating income	56,000	(17% of sales)
Interest	5,000	
Other income	1,000	
Income before taxes	50,000	(15% of sales)
Taxes	20,000	
Net income	$30,000	(9% of sales)

Operating income increases 22 percent (but still 17 percent of sales), and both income before taxes and net profit increase 25 percent. All that for a less than 10 percent increase in sales. The 15 percent improvement in the cash flow to current portion of long-term debt ratio is caused by improved profits and cash flow, not a reduction in long-term debt. If no other debt is taken on to achieve the higher level of sales, you have employed both your own capital (equity) and borrowed capital more effectively.

Profitability ratios

This family of ratios is saved for last, not because it is the least important, but because it reflects the results of all areas of management. All the information conveyed by liquidity, safety/leverage, and asset management ratios has an impact on profitability. Liquidity is necessary for profitability. If you can't pay your bills, you'll be out of business no matter how profitable you are. Leverage, or the amount of debt you employ, affects the riskiness of your company from both a cash flow and profitability standpoint. And asset management has its impact on profitability through the costs associated with having assets, which are necessary to achieve and support your level of operations or sales volume. Profits are the bottom line. They are the net result of all policies you follow and all decisions you make.

Profitability ratios relate profits or income to some other piece of financial information. Generally this family of ratios is made up of two subgroups: those dealing with profits relative to sales, and those that relate profits to invested capital or assets. Both subgroups are covered in this chapter by the profit margin, return on assets, and return on equity ratios.

Profit margin

The profit margin is a major performance measure that relates the level of profits to the level of sales. It compares the money left over, after all expenses (except taxes), to net sales. Like all profitability ratios that relate profits to sales or operations, the profit margin uses information from the income statement.

You already calculated a profit margin when you built the common-sized income statement (in Chapter 3). Here we'll describe this operating ratio in more detail and discuss some common adjustments to it.

Also known as: Profit on net sales; income on sales; profit margin on sales; earnings to sales; before-tax profit margin

When to calculate: Monthly

Where to find data: Income statement

How to calculate: The formula is:

$$\text{Profit margin} = \frac{\text{Income before taxes}}{\text{Net sales}}$$

Income before taxes should not include extraordinary items. Extraordinary items are those revenues or expenses that do not usually occur in the normal course of business, such as revenues or expenses from selling land, settling major (and presumably nonrecurring) lawsuits, and so forth.

Form of answer: A percentage

Example:

$$\text{Profit margin} = \frac{40{,}000}{300{,}000} = 13\%$$

A profit margin of 13 percent means that after all expenses except taxes are paid, you have 13 cents left out of each sales dollar.

How to analyze the result: The result of the calculation is a percentage, which is a relative number, not an absolute one. Some businesses depend on volume to make profits; others depend on margins. For example, two firms (in different industries) can have the same level of dollar profits but very different profit margins. A high profit margin on a low level of dollar sales might produce the same level of dollar profits as a low profit margin on a high dollar sales volume. Thus, a posh jewelry store (with a high margin) and a supermarket (with a low margin) could end up with the same amount of dollar profits.

If the ratio is lower than expected, then one or more areas, most likely expenses, need attention. Poor pricing and sales volume could also contribute to the lower ratio. To identify the problem area, it can be helpful to analyze the profit margin in conjunction with the gross margin (gross profit divided by sales). If the gross margin looks reasonable but the profit margin is low, the problem is operating expenses (selling, adminstrative, or general) and interest expenses.

There is no general rule of thumb for evaluating this ratio. In actuality, profit margin varies from industry to industry. To confuse things even more, it can vary greatly within one industry depending on the particular market a firm serves or the significant cost advantages one firm has over others.

The profit margin can also be used to measure subgroupings within a company, along division, product, or product group lines. The objective is to determine the most and the least profitable products. With this information you could decide to promote or drop products according to their profitability. But a word of caution is warranted here. Tracking sales by product is usually easy. But tracking the cost of each product can be time-consuming and expensive for many small firms.

Generally, a firm that shows reasonably good levels of before-tax margins that are consistent over time would be considered profitable and well-managed. Erratic margins are often viewed with more distrust or fear than a consistently low margin. A business can't usually survive poor and periodically negative cash flow, but it can survive short periods of negative profitability.

Viewpoints: Everybody — owner, banker, and manager — likes high profit margins. Some stockholders, though, particularly if they are sole stockholders, would prefer to see profits and profit margins as close to zero as possible. They want to minimize taxes by deducting all

possible legal expenses. These owner/stockholders might do well to remember the motto, "Room for bulls and bears but no room for pigs." Not only do many bankers take this attitude, but many outside investors do as well. If these owners never anticipate borrowing or seeking outside equity, they can play the tax game. But, if they want the company to grow or expand, they need to look at the larger picture. Building a strong foundation of equity is based on profits and will encourage others to join or support their company. In summary, most owners, bankers, and managers prefer a higher profit margin to a lower one, and a consistent profit margin to an inconsistent one.

Adjustments and variations: Income figures (and ratios based on those figures) below the gross profit line on the income statement can often be adjusted to the advantage of small firms. Quite often some business expenses are not really necessary to the operation and profitability of the business. Rather, they benefit the owners directly and reduce taxable income and minimize taxes. Expenses such as personal cars or private club memberships can be added to the earnings-before-taxes figure. When the profit margin is recalculated, it increases. Overall, though, it is probably best to use the income before taxes figure in the profit margin ratio when you want to assess the operational and financial management of your firm.

Net profit margin variations. This is a common profitability ratio that measures profit per dollar of sales. It differs from the profit margin ratio described previously in that it uses income after taxes rather than income before taxes. It is calculated by dividing net income after taxes by net sales for a given period.

Taxes obviously affect the net profit margin and for this reason some people decide to use the net profit margin while others prefer the before taxes profit margin. Various factors affect the tax line: investment tax credits (or tax credits of any type), state income taxes, tax loss carry forwards, and so forth. Anything that affects the tax line affects net income and the net profit margin. Therefore, the ratio is used by some to assess the overall profitability of a firm including the tax management area. But others feel that the before tax profit margin better reflects the profitability of a firm and management performance because it allows for fewer complications that could affect the ratio, up or down. Because taxes are excluded from this ratio, some managers feel it is a more accurate indicator of a firm's profitability.

The preference for one ratio over another extends to sources of industry averages. For example, Dun & Bradstreet uses net profit margin while Robert Morris Associates uses before tax profit margin. Whatever you prefer, double check that you are using the same ratio as the source when you make industry comparisons.

Return on total assets (ROA)

The return on assets ratio measures how productive your assets are. To put it another way, it measures how much profit you are generating with each dollar of your assets. The ratio is used for a variety of purposes, ranging from pricing to investment decisions. It is also one of the most commonly misunderstood and misinterpreted ratios.

Unlike profitability ratios drawn from income statement data, the return on assets ratio uses both income statement and balance sheet information. It relates profits to the level of investment in total assets. While profit margins relate profits to the level of sales activity, the return on assets relates profits to the asset investment that is necessary to support sales. ROA is a general indication of how profitable and productive the firm's asset investment is.

The return on assets ratio, then, is a bottom-line measure of both profitability and asset management, both of which are considered controllable by management. In fact, this ratio is frequently used as a performance yardstick in many large corporations.

Also known as: Return on investment (ROI); Return on total assets; Rate of return on investment; Rate of return on total assets

When to calculate: Monthly

Where to find data: Income before taxes is found on the income statement, total assets on the balance sheet.

How to calculate: Use the formula:

$$\text{ROA} = \frac{\text{Income before taxes}}{\text{Total assets}}$$

Income before taxes comes from the income statement and excludes any extraordinary revenues or expenses.

Total assets is found on the balance sheet.

Form of answer: A percentage

Example:

$$\text{ROA} = \frac{40{,}000}{230{,}000} = 17.39\%$$

This means that for every dollar of total assets, you're earning 17.39 cents of profit.

How to analyze the result: When ROA is too low, the problem area may be either a lack of profits or excess investment in assets. If ROA is too high, it can indicate that older assets (particularly fixed assets) may need to be replaced in the near future or that assets should be added to support growth and higher levels of sales activity. The determination of "too high" or "too low" is based upon comparison of the ratio with industry averages or with the firm's own ratio profile over time. Although some people apply a 20 percent rule of thumb (aim for a 20

percent before tax return on assets), that general rule may not be appropriate for your industry.

ROA is one of the first ratios used to evaluate a firm. If the ratio is too high or too low, you can further evaluate ROA by using profit margin or asset management ratios. Both profit margin and asset management influence the return on asset ratio. Specifically, ROA is equal to total asset turnover (net sales divided by total assets) multiplied by the before tax profit margin (income before taxes divided by net sales). If ROA is too high or too low, you would evaluate both the total asset turnover and before tax profit margin to determine which is causing the greatest problem. Once this is determined, you can isolate the major problem areas and take corrective action.

For example, assume that a low total asset turnover is causing ROA to be lower than expected. You can then evaluate the major asset turnover ratios to see where the problem lies. (These include the fixed asset turnover, inventory turnover, and receivables turnover ratios.) Assume the inventory turnover and receivables turnover ratios are in line with expectations but the fixed asset turnover ratio is too low. That means you have an adequate level of accounts receivable and inventory, but too high an investment in fixed assets for your level of sales. That's the cause of your low ROA.

In summary, a healthy ROA means that owners are getting more value on their investment and bankers are getting safety on their investment.

Viewpoints:

Owner/stockholder. To the owner/stockholder, a high and stable or growing return on assets ratio is important. It represents the efficiency with which both assets and capital are being employed. Stable or growing ROA ratios also tend to reduce the riskiness of both income flows and cash flows, thereby making a firm's profitability more attractive.

But a growing ROA is not always a positive sign. For example, assume that income before taxes has been the same for the last five years. But net fixed assets has declined over the same period. The result could be an increasing ROA. The explanation for this is quite straightforward. Net fixed assets is made up of fixed assets minus accumulated depreciation. If there are no new fixed asset investments over a period of time, net fixed assets will be reduced by the total amount of depreciation taken in those years (which is added to accumulated depreciation). Therefore, the declining net fixed assets causes the ROA to increase.

When ROA is used to evaluate management's performance, as it often is, caution must be taken to understand why the ratio is high or low. As indicated above, a high and growing ratio is not always in the best interests of the owner/stockholder. Minimizing additional fixed asset investment will cause ROA to improve. But if management does not keep up the facilities (building, plant, and equipment), in an attempt to look good in terms of ROA, owners' investment may be hurt in the long run. Maintenance and upkeep are necessary to keep most fixed assets productive and useful. If assets are not maintained they will not have as long a useful life as they should. If they must be replaced too soon, that replacement usually carries a higher price tag than the cost of properly and prudently maintaining them.

Banker. To the lender or creditor, a relatively high and stable or growing ROA indicates safety if it is accompanied by a good debt to worth ratio. Given the general correspondence and linkage between profits and cash flow, a high ROA means good management and safety.

Manager. In addition to keeping both owners and lenders happy, a relatively high ROA usually verifies that management is operating the firm effectively and efficiently. ROA is a key number used to assess both the firm and management's performance.

Managers can also use ROA to analyze product groups, management groups, or asset investments at different locations. For example, the manager of a retail business with several locations could use ROA to analyze the performance of each store. Or, a manager could analyze the performance of individual products.

Adjustments and variations:

Total assets adjustments. Adjustments to ROA depend upon the user, and most are made by people outside the firm. Many of the common adjustments to the assets part of ROA are the same as those for the debt to worth ratio. They include the hidden assets and the intangible assets adjustments. (See pages 90–91 for descriptions.) The difference between making these adjustments to ROA and to the debt to worth ratio is that for ROA intangible assets would be subtracted from total assets and hidden assets would be added to total assets. The effect of the intangible asset adjustment is to increase the ROA ratio. The hidden asset adjustment decreases the ROA.

The third adjustment commonly made is to subtract the value of any asset not directly related to the business from the total assets figure. These assets could include assets used by the owner, such as a personal car.

Income before taxes adjustments. These adjustments are the same as those discussed under profit margin. Certain business expenses incurred in asset management, described under the last adjustment, can be added to the income-before-taxes figure. Since this increases income, ROA also increases.

After-tax ROA variations. Net income can be used instead of income before taxes. That gives you an after-tax ROA, which is usually lower than before-tax ROA.

What if you want to examine your overall profits?

WHAT IF 22 **General & administrative expenses include personal expenses.** Suppose that you, like many owners of small businesses, have the firm pay for your car expense and part of your family travel expenses. This year those expenses totaled $7,000, and are carried under general and administrative expenses on the income statement. If the expenses had not been paid for by the business, what would your before tax profit margin have been?

To restore

the example

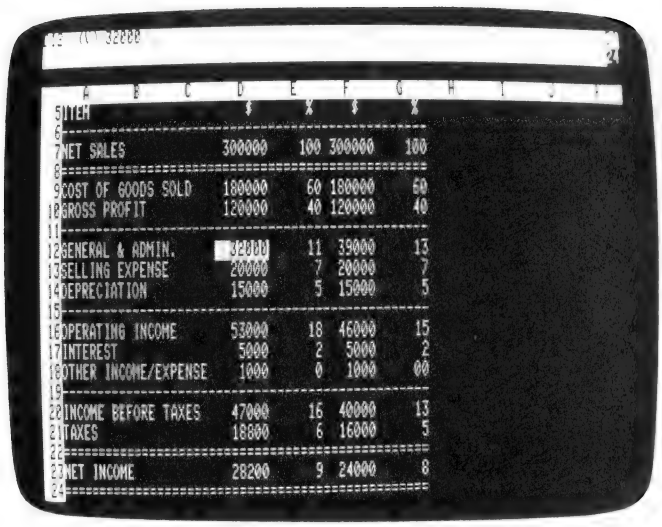
Type >**D**(B)**7** and type **300000** (R)

To enter

a change in G & A from $39,000 to $32,000

Type >**D**(B)**12** and type **32000** (R)

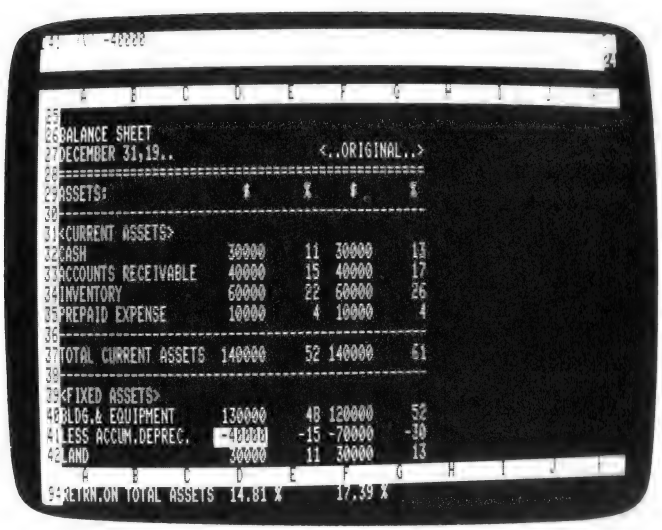
Result Operating income and income before taxes both increase by $7,000 to $53,000 and $47,000 respectively. The income before tax profit margin is 16% instead of 13%.



ANALYSIS Owners of small businesses often include expenses that are personal in nature in their income statement. As long as the business person can show that the expenses are business related, the expenses will usually be accepted by the IRS. For example, the car has to be used for business purposes and the travel has to be business related (such as making a sales call or meeting with suppliers). But the total amount of these costs is not necessarily business related. When this is true and they are deducted from expenses, the before tax profit margin will be higher. In this case it was higher by 3 percent.

WHAT IF 23 **You use market value instead of book value of assets.** Let's examine the effect of making an adjustment to the return on assets ratio. Fixed assets can be adjusted for market value instead of using their book value. Assume that the market value of a building in the buildings and equipment account (under fixed assets) is $60,000, while its original cost was only $50,000. Also assume that the building's accumulated depreciation is $30,000. The book value is $20,000 ($50,000 minus $30,000 accumulated depreciation). The total adjustment will be $40,000 (the $10,000 increase in value plus the $30,000 in depreciation). What impact will this $40,000 adjustment have on the return on assets ratio?

Begin by moving your cursor into the lower window, and then scroll the display so that row 94 (the return on assets ratio) can be seen. Then return the cursor to the upper window.



To restore
the example

Type >**D**(B)**12** and type **39000** (R)

To enter
a change in building and equipment from $120,000 to $130,000; and in accumulated depreciation from -$70,000 to -$40,000

Type >**D**(B)**40** and type **130000** (R)
>**D**(B)**41** and type **-40000** (R)

Result ROA falls from 17.39% to 14.81%.

ANALYSIS A relatively small increase in the value of _____ fixed assets can affect (decrease) the ROA ratio. Remember that ROA is determined by dividing income before taxes (the numerator) by total assets (the denominator). When the denominator increases and the numerator doesn't, the percentage goes down. That's what happened in this example. It means you are making less money on the use of your assets when they are valued at their replacement cost or market value.

This adjustment — using market value instead of book value for a fixed asset — can give you a more stringent measure of profitability, or return on assets.

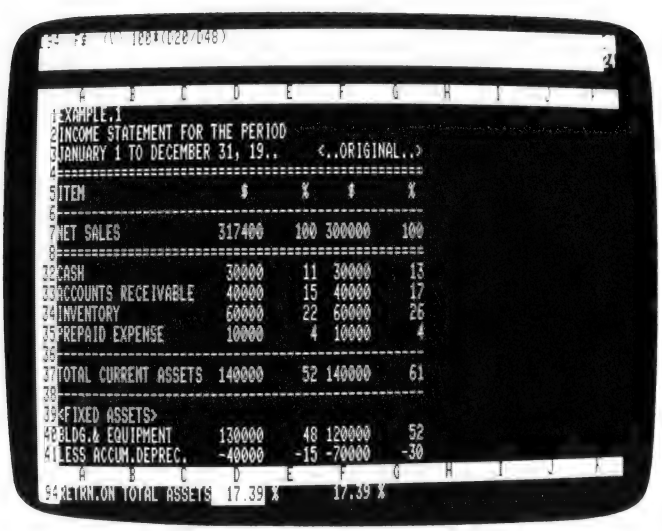
WHAT IF 24 **You want to restore the return on assets ratio.** Let's continue with the previous "What If" example, where the ROA dropped to 14.81%. You want to determine how much in additional net sales is needed to increase the income before taxes enough to restore the ROA to 17.39%. (Note: The computer calculates income before taxes based upon the value entered for net sales. Therefore, you only need to enter a net sales figure.)

To enter
a change in buildings and equipment from $120,000 to $130,000 and a change in depreciation from -$40,000 to -$70,000. (These changes may have been made in the previous "What If.")
a guess at net sales that will give an increase in income before taxes sufficient to restore the return on total assets ratio to 17.39%

Type >**D**(B)**7** and type (a variety of net sales figures larger than 300000 until you find one that gives you a return on assets ratio of 17.39%) (R)

Result A net sales figure of $317,400 gives sufficient income before taxes to restore the ROA ratio to 17.39%. That's an increase of $17,400, or 5.8%, in net sales. Income before taxes (calculated by the computer) increases $6,960, or 17.4%, to $46,960.

ANALYSIS As noted previously, adjusting the value of _____ assets for their replacement market value produces a more stringent and realistic measure of asset productivity. In a sense it stabilizes the relationship between income before taxes and total assets. If total assets were not adjusted, no new assets were added and income before taxes was the same from year to year, the return on assets ratio would actually increase. This is the direct result of depreciation, which reduces total assets from one period to the next.


EXAMPLE.1
INCOME STATEMENT FOR THE PERIOD
JANUARY 1 TO DECEMBER 31, 19..
<..ORIGINAL..>
ITEM $ % $ %
NET SALES 317400 100 300000 100
CASH 30000 11 30000 13
ACCOUNTS RECEIVABLE 40000 15 40000 17
INVENTORY 60000 22 60000 26
PREPAID EXPENSE 10000 4 10000 4
TOTAL CURRENT ASSETS 140000 52 140000 61
<FIXED ASSETS>
BLDG.& EQUIPMENT 130000 48 120000 52
LESS ACCUM.DEPREC. -40000 -15 -70000 -30
RETRN.ON TOTAL ASSETS 17.39 % 17.39 %

The major strength of the market-value-adjusted return on assets ratio is that it reflects profitability of the asset base as if assets were replaced and all assets must be replaced at some point. It eliminates the shock associated with replacement of a major fixed asset in any given year since the replacement or market value is taken into account.

In this "What If" we see that under the more stringent market-value-adjusted return on assets, the firm should be generating higher sales and profits to maintain a stable ratio.

WHAT IF 25 **Assets increase dramatically.** Assume that you replace your buildings and equipment; the new value is $270,000. What is the impact on return on assets? What level of before-tax profits and sales should you have to maintain your former ROA?

To restore

the example

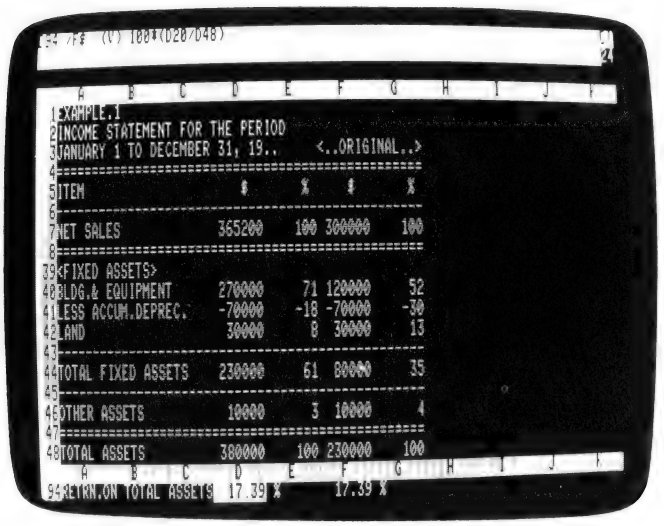
Type >**D**(B)**7** and type **300000** (R)
>**D**(B)**41** and type **-70000** (R)

To enter

a change increasing buildings and equipment from $130,000 to $270,000
a guess at net sales that would result in a sufficiently high net income to restore return on assets to 17.39%

Type >**D**(B)**40** and type **270000** (R)
>**D**(B)**7** and type (a variety of net sales figures until you find one that will result in income before taxes sufficient to restore return on assets to 17.39%) (R)

Result The change in buildings and equipment to $270,000 caused the return on assets ratio to fall to 10.53%. It took a sales increase of $65,200 to $365,200, and a resulting income-before-taxes increase of $26,080 to $66,080 (a 65% increase) to restore the ratio to 17.39%.


EXAMPLE.1
INCOME STATEMENT FOR THE PERIOD
JANUARY 1 TO DECEMBER 31, 19..
<..ORIGINAL..>
ITEM
NET SALES 365200 100 300000 100
<FIXED ASSETS>
BLDG.& EQUIPMENT 270000 71 120000 52
LESS ACCUM.DEPREC. -70000 -18 -70000 -30
LAND 30000 8 30000 13
TOTAL FIXED ASSETS 230000 61 80000 35
OTHER ASSETS 10000 3 10000 4
TOTAL ASSETS 380000 100 230000 100
RETRN.ON TOTAL ASSETS 17.39 % 17.39 %

ANALYSIS Before a fixed asset is purchased, it should be carefully evaluated to determine if it will lead to higher sales and profit. The purchase of additional assets requires additional sales. Otherwise, the return on assets ratio drops.

In the example you just explored, the purchase of a fixed asset required a sales increase of 22 percent and income before taxes and a net income increase of 65 percent, just to maintain the ROA at 17.39%. If you could not reasonably expect those increases, then the additional investment in a fixed asset is both unprofitable and unwise.

Return on equity

Return on equity (ROE) shows the net effect of all policies and decisions made by the firm on owner investment; it shows what the firm has been able to earn with the stockholders' investment in the firm. It is the key to keeping you and your other stockholders satisfied with their investment in your business.

Keep in mind that equity or net worth can be made up of several components. In its simplest form, it is comprised of common stock and retained earnings. Common stock is the initial (plus any subsequent) stockholder investment. This is what investors have put into the business. Retained earnings are that portion of net income retained within the firm or not paid to stockholders as dividends. So stockholder or owner investment includes both the initial investment and what the business has earned but not paid out to stockholders (retained earnings).

Also known as: Return on owner equity; Return on capital; Return on net worth; Return on worth; Return on investment

When to calculate: Annually

Where to find data: Income before taxes is found on the income statement; owner equity is found on the balance sheet.

How to calculate: The formula is:

$$\text{ROE} = \frac{\text{Income before taxes}}{\text{Total owner equity}}$$

Income before taxes is used, excluding any extraordinary inflows or outflows.

Owner equity includes capital stock, any paid-in capital, and retained earnings.

Form of answer: A percentage

Example:

$$\text{ROE} = \frac{\$40{,}000}{\$130{,}000} = 30.77\%$$

This means that for every dollar of owner investment, 30.77 cents was earned during this accounting period.

How to analyze the result: The return on equity (ROE) ratio answers the question, "How profitable is the owner's investment?" It represents the end result of all management's efforts. These include pricing decisions, cost control, asset management, financial management, and financing policies. For the owner/manager, return on equity represents the results of all his or her efforts.

Viewpoints:

Owner/stockholder. This ratio represents the bottom line for an owner or stockholder of a firm. If the return on equity is not as high as other available investments, the stockholder will be dissatisfied. For the closely held or small firm which is not wholly owned by management, a lower than desired return on equity can pose serious problems. If the management's ownership position is not sufficient to control the overall destiny of the organization, other stockholders who are dissatisfied may impose policies that are not consistent with the management's desires and judgements. The nonmanagement stockholders want to improve the value of their investment.

Stockholders expect their investment to earn a rate of return at least equal to other investments of comparable risk that are available to them. Ideally, ROE should be stable and at a high enough level to insure continued stockholder support and ownership of the firm.

Banker. Lenders and creditors generally view return on equity as less important than the ability of the firm to meet its obligations, such as interest payments. But they do look at ROE as an indication of how well all aspects of the business are being managed.

Manager. Since most small businesses are managed by their owners or principal stockholders, these managers also have the goal of a good return on investment. They often put in long hours and the company becomes a very large part of their lives and of their family's. To many, the emotional investment or commitment to the business is an intangible addition to ROE. They value other rewards, such as autonomy, in addition to profit.

Therefore, managers of small firms may not always seek a high return on equity. The tax disadvantages of profitability are one reason. Once a satisfactory level of return is achieved, the owner/managers may have other goals and motivations beyond profits, or increasing the ROE.

Adjustments and variations: Variations usually deal with the way income or total equity is calculated. These were discussed under the debt to worth ratio. The first two we will discuss involve income variation. The second adjusts the equity figure for intangible assets.

After-tax return on equity variation. The variations of return on equity are made to serve both owners and lenders. The most common is to use net income instead of income before taxes. In our example this would produce:

$$\text{ROE} = \frac{\text{Net income}}{\text{Equity}} = \frac{\$24{,}000}{\$130{,}000} = 18.46\%$$

This adjustment causes ROE in our example to drop from 30.77% to 18.46%. It shows what effect taxes have on the ROE.

After tax return to common stockholders variation. In firms where part of equity is in the form of preferred stock, common stockholders will be concerned with the income that is available to them, not with the net income which does not include dividend payments to preferred stockholders. This variation requires two adjustments: subtracting the preferred stock dividends from net income to show which income is available to common stockholders, and subtracting the preferred stock from equity. The after-tax return on common equity is calculated by:

$$\frac{\text{Net income} - \text{Preferred dividends}}{\text{Total equity} - \text{Preferred stock}}$$

If in our example there was $20,000 in preferred stock that pays a 5 percent dividend ($1,000) each year, the ratio would be:

$$\frac{\$24{,}000 - \$1{,}000}{\$130{,}000 - \$20{,}000} = 20.91\%$$

Depending on the size of the preferred stock investment and dividends, the after-tax return on common equity may be higher or lower than ROE.

Return on tangible net worth variation. The return on tangible net worth adjusts equity for intangible assets such as goodwill or patents. Intangible assets are subtracted from owner equity. For instance, if your assets include $8,000 of intangibles, you would compute the return on tangible net worth as:

$$\frac{\text{Income before taxes}}{\text{Equity} - \text{Intangibles}} = \frac{\$40{,}000}{130{,}000 - \$8{,}000}$$

$$= \frac{\$40{,}000}{\$122{,}000} = 32.79\%$$

This adjustment, in our example, increases ROE from 30.77% to 32.79%. Since intangibles may have little real or lasting value, this variation presents a more realistic picture of the profitability of assets investment. (*Note*: Robert Morris Associates reports industry averages for this ratio.)

WHAT IF 26 **Profits increase.** It's the end of the year, time to assess the return on investment (i.e., owner equity) in the firm. Income before taxes is up $16,000; profits after tax (i.e., net income) is up almost $10,000. There is a corresponding increase in retained earnings. But what do these increases mean to your investors? The return on equity ratio will tell you.

Begin by moving your cursor into the lower window (type ;), and then scroll the display so that row 95 (the return on equity ratio) is visible. Then return the cursor to the upper window.

To restore

the example

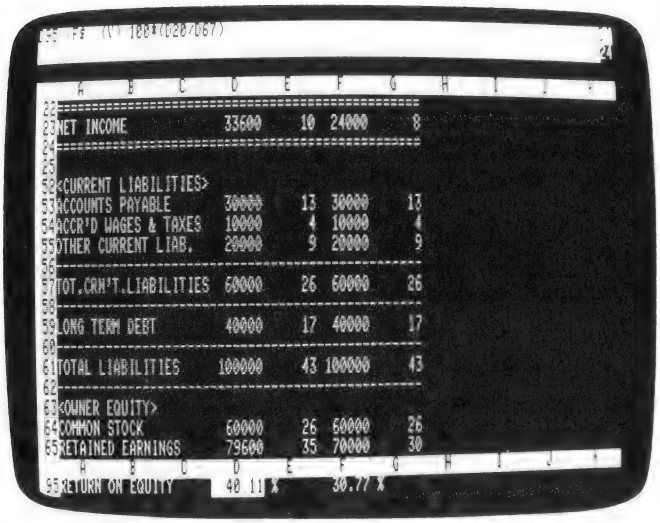
Type >**D**(B)**7** and type **300000** (R)
>**D**(B)**40** and type **120000** (R)

To enter

a change in net sales sufficient to increase net income to $33,600; and an increase in retained earnings from $70,000 to $79,600

Type >**D**(B)**7** and type **340000** (R)
>**D**(B)**65** and type **79600** (R)

Result The $40,000 sales increase resulted in an increase in income before taxes from $40,000 to $56,000, and an increase in net income from $24,000 to $33,600. The return on equity ratio rose from 30.77% to 40.11%.



NET INCOME	33600	10	24000	8	
<CURRENT LIABILITIES>					
ACCOUNTS PAYABLE	30000	13	30000	13	
ACCR'D WAGES & TAXES	10000	4	10000	4	
OTHER CURRENT LIAB.	20000	9	20000	9	
TOT.CRN'T.LIABILITIES	60000	26	60000	26	
LONG TERM DEBT	40000	17	40000	17	
TOTAL LIABILITIES	100000	43	100000	43	
<OWNER EQUITY>					
COMMON STOCK	60000	26	60000	26	
RETAINED EARNINGS	79600	35	70000	30	
RETURN ON EQUITY	40.11 %		30.77 %		

ANALYSIS As you might have expected, the higher profits increased the return on equity. This occurred because the percentage increase in income before taxes was greater than the percentage increase in total equity.

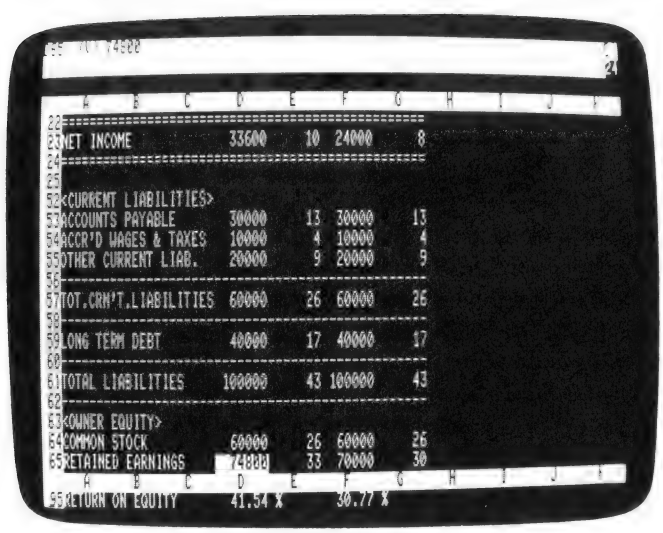
WHAT IF 27 **Dividends are paid.** The stockholders also want a share of the profits through dividends. Suppose you pay them half of the net income increase ($9,600). That's $4,800 in dividends, which means a $4,800 decrease in retained earnings in your firm. What effect will paying the dividends have on the ROE ratio?

To enter

a change increasing net sales from $300,000 to $340,000 and a decrease in retained earnings from $79,600 to $74,800 (the sales may have been changed in the previous "What If")

Type >**D**(B)**7** and type **340000** (R)
>**D**(B)**65** and type **74800** (R)

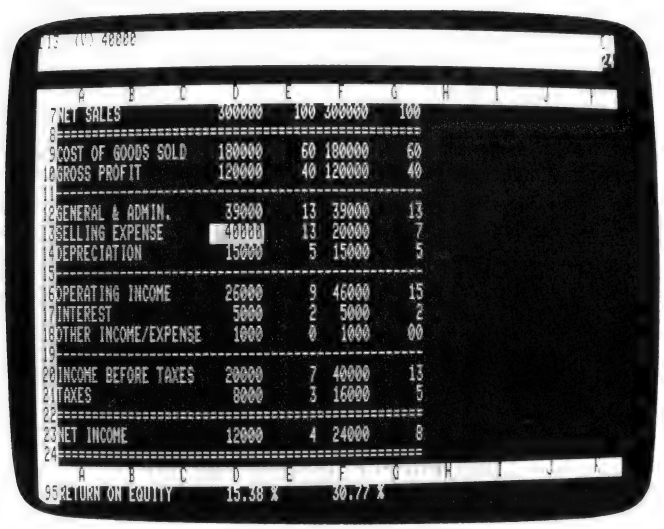
Result Return on equity changed to 41.54%, up from 30.77% in the <ORIGINAL> column and from 40.11% in the previous "What If."



NET INCOME	33600	10	24000	8	
<CURRENT LIABILITIES>					
ACCOUNTS PAYABLE	30000	13	30000	13	
ACCR'D WAGES & TAXES	10000	4	10000	4	
OTHER CURRENT LIAB.	20000	9	20000	9	
TOT.CRN'T.LIABILITIES	60000	26	60000	26	
LONG TERM DEBT	40000	17	40000	17	
TOTAL LIABILITIES	100000	43	100000	43	
<OWNER EQUITY>					
COMMON STOCK	60000	26	60000	26	
RETAINED EARNINGS	74800	33	70000	30	
RETURN ON EQUITY	41.54 %		30.77 %		

ANALYSIS Since only $4,800 of the net income increase was retained in the business, total equity will increase from $130,000 to $134,800. The rest of the profit increase was passed on to stockholders as dividends. This obviously had the effect of improving return on equity even further. But consider your tax situation. If your personal tax rate is higher than your company's, then the net benefit might be lessened. Alternatively, if you fear penalties under the Internal Revenue Service's excess earnings rules, you may have had little choice in paying out some of the earnings as dividends unless the profits can be invested elsewhere in the business.

WHAT IF 28 **Selling expenses increase.** During the last year, you undertook a major marketing effort which increased selling expenses from $20,000 to $40,000. The results of this effort are not expected to materialize until next year. Until then, how has this increase in selling expense affected the ROE ratio: up, down, or no change?



To restore

the example

Type >**D**(B)**7** and type **300000** (R)
>**D**(B)**65** and type **70000** (R)

To enter

a change in selling expense from $20,000 to $40,000

Type >**D**(B)**13** and type **40000** (R)

Result The return on equity ratio drops to 15.38%.

ANALYSIS The selling expense increase of $20,000 causes the income before taxes to decrease by the same amount. Since ROE is calculated by dividing income before taxes by total owner equity, the decreased income before taxes figure accounts for the drop in ROE.

Is this large ratio decline good or bad? At first glance, you might see it as alarmingly bad. But then you need to look at the cause of the decrease in return on equity. Any marketing effort, especially one involving the doubling of selling expenses, is not likely to have any immediate results in terms of increased sales and profits. If the new thrust is well-conceived and planned, sales and profits should pick up in the future. When they do, the return on equity ratio should also pick up.

6 Building your own customized templates

Introduction

In this chapter, three templates that can be adapted to your own business are described in detail. Template.1 includes a linked income statement, balance sheet, and ratio section. Two supplemental templates (Template.2 and Template.3) are also described. Template.2 details line items on the income statement, and Template.3 details selected line items on the balance sheet.

Each of these three templates can be customized to any extent you want. You can enter the templates exactly as described and then adapt them, or, if you feel comfortable with the VisiCalc program, you can adapt them as you proceed. For Template.1, detailed step-by-step instructions are given with accompanying graphic illustrations. Instructions for the other templates are less detailed, since you'll be using many of the same computer procedures. You'll be able to enter and adapt the templates more quickly after having learned the steps in Template.1.

Template.1: The linked financial statements and ratios

The income statement, balance sheet, and ratios are linked together on this template, so that ratios using figures from both statements can be calculated automatically. To build this linked template, you need an Apple computer with at least 64K of memory. If you have an Apple II with less than 64K, you have two options available:

1 Install a memory expansion card from Apple or an independent supplier to increase memory to 64K.

2 Enter the income statement and the balance sheet as separate templates. Add a new section to the bottom of each statement for the key numbers used to calculate the ratios.

Both the income statement and balance sheet have sections for the current and previous years' results. The first time you use your templates, fill in all entries for this month, the same month last year, this year to date, and last year to date. After the first year, however, monthly and year-to-date figures from the previous year's statements can be easily transferred to the current statement for comparison purposes by using the DIF command (see pages 34–35).

Once you build and customize Template.1, you can use it to obtain the following information quickly.

PAGE 1 TEMPLATE.1 FINANCIAL STATEMENTS FOR: (NAME OF YOUR COMPANY)

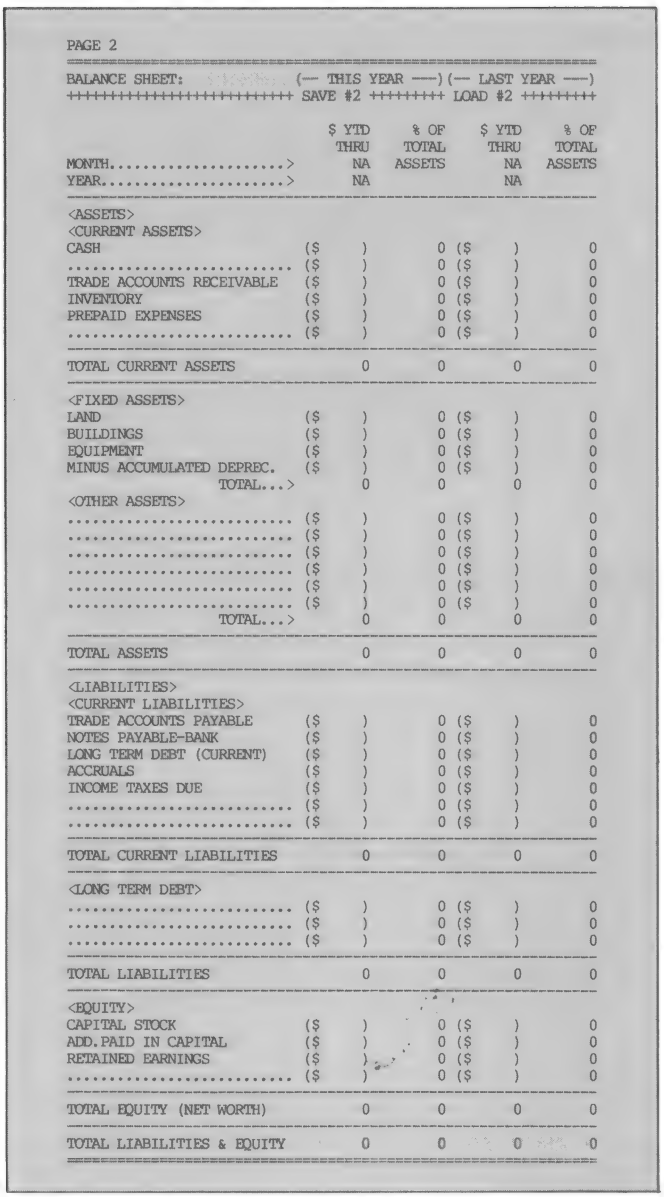
INCOME STATEMENT: (THIS YEAR) (LAST YEAR)
SAVE #1 LOAD #1

	$ THIS MONTH	% OF NET SALES	$ YTD THRU NA	% OF NET SALES	$ THIS MONTH NA	% OF NET SALES	$ YTD THRU NA	% OF NET SALES
ENTER MONTH.....>	(#)							
ENTER YEAR.....>	(#)							
<SALES>								
GROSS SALES	($)	0	($) 0	0	($) 0	0	($) 0	0
DISCOUNTS,RETURNS & ALLOW.	($)	0	($) 0	0	($) 0	0	($) 0	0
NET SALES REVENUE	0	0	0	0	0	0	0	0
<COST OF GOODS SOLD>								
.....	($)	0	($) 0	0	($) 0	0	($) 0	0
.....	($)	0	($) 0	0	($) 0	0	($) 0	0
.....	($)	0	($) 0	0	($) 0	0	($) 0	0
.....	($)	0	($) 0	0	($) 0	0	($) 0	0
.....	($)	0	($) 0	0	($) 0	0	($) 0	0
.....	($)	0	($) 0	0	($) 0	0	($) 0	0
TOTAL COST OF GOODS SOLD	0	0	0	0	0	0	0	0
GROSS PROFIT	0	0	0	0	0	0	0	0
<OPERATING EXPENSES>								
GENERAL,ADMIN. & SELLING	($)	0	($) 0	0	($) 0	0	($) 0	0
INTEREST EXPENSE	($)	0	($) 0	0	($) 0	0	($) 0	0
DEPRECIATION	($)	0	($) 0	0	($) 0	0	($) 0	0
.....	($)	0	($) 0	0	($) 0	0	($) 0	0
TOTAL OPERATING EXPENSES	0	0	0	0	0	0	0	0
OPERATING INCOME/LOSS	0	0	0	0	0	0	0	0
OTHER INCOME	($)	0	($) 0	0	($) 0	0	($) 0	0
OTHER EXPENSE	($)	0	($) 0	0	($) 0	0	($) 0	0
PROFIT BEFORE TAXES	0	0	0	0	0	0	0	0
TAXES	($)	0	($) 0	0	($) 0	0	($) 0	0
NET INCOME/LOSS (AFT.TAXES)	0	0	0	0	0	0	0	0

The income statement

1 Sales, expenses, and profits for the current month, the current year to date (YTD), the same month last year, and the year to date for last year. With this information, you can easily compare results for this year with those of the previous year, which is helpful in monitoring company performance.

2 Operating ratios (all income and expense items expressed as percentages of net sales) for the current month, the current year to date, the same month last year, and the year to date for last year. (A discussion on how to interpret and use this information is included in Chapter 3.)



PAGE 2

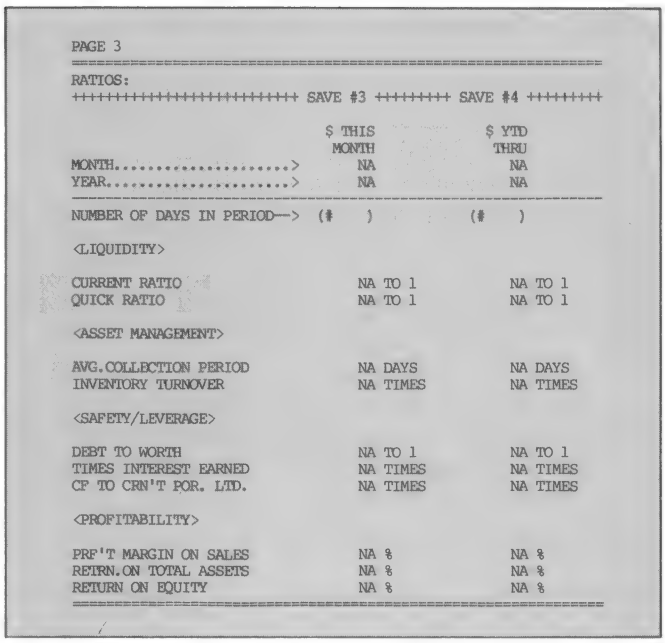
BALANCE SHEET: (— THIS YEAR —)(— LAST YEAR —)
++++++++++++++++++++++++++ SAVE #2 +++++++++ LOAD #2 +++++++++

		$ YTD THRU	% OF TOTAL	$ YTD THRU	% OF TOTAL
MONTH.....>		NA	ASSETS	NA	ASSETS
YEAR.....>		NA		NA	
<ASSETS>					
<CURRENT ASSETS>					
CASH	($)	0	($)	0	
.....	($)	0	($)	0	
TRADE ACCOUNTS RECEIVABLE	($)	0	($)	0	
INVENTORY	($)	0	($)	0	
PREPAID EXPENSES	($)	0	($)	0	
.....	($)	0	($)	0	
TOTAL CURRENT ASSETS		0	0	0	0
<FIXED ASSETS>					
LAND	($)	0	($)	0	
BUILDINGS	($)	0	($)	0	
EQUIPMENT	($)	0	($)	0	
MINUS ACCUMULATED DEPREC.	($)	0	($)	0	
TOTAL...>		0	0	0	0
<OTHER ASSETS>					
.....	($)	0	($)	0	
.....	($)	0	($)	0	
.....	($)	0	($)	0	
.....	($)	0	($)	0	
.....	($)	0	($)	0	
.....	($)	0	($)	0	
TOTAL...>		0	0	0	0
TOTAL ASSETS		0	0	0	0
<LIABILITIES>					
<CURRENT LIABILITIES>					
TRADE ACCOUNTS PAYABLE	($)	0	($)	0	
NOTES PAYABLE-BANK	($)	0	($)	0	
LONG TERM DEBT (CURRENT)	($)	0	($)	0	
ACCRUALS	($)	0	($)	0	
INCOME TAXES DUE	($)	0	($)	0	
.....	($)	0	($)	0	
.....	($)	0	($)	0	
TOTAL CURRENT LIABILITIES		0	0	0	0
<LONG TERM DEBT>					
.....	($)	0	($)	0	
.....	($)	0	($)	0	
.....	($)	0	($)	0	
TOTAL LIABILITIES		0	0	0	0
<EQUITY>					
CAPITAL STOCK	($)	0	($)	0	
ADD.PAID IN CAPITAL	($)	0	($)	0	
RETAINED EARNINGS	($)	0	($)	0	
.....	($)	0	($)	0	
TOTAL EQUITY (NET WORTH)		0	0	0	0
TOTAL LIABILITIES & EQUITY		0	0	0	0

The balance sheet

1 Assets and liabilities for the current month, the current year to date, the same month last year, and the year to date for last year.

2 Operating ratios (all assets and liabilities expressed as percentages of total assets) for the current month, the current year to date, the same month last year, and the year to date for last year. (A discussion on how to interpret and use this information is covered in Chapter 4.)



PAGE 3

RATIOS:
++++++++++++++++++++++++++ SAVE #3 +++++++++ SAVE #4 +++++++++

	$ THIS MONTH	$ YTD THRU
MONTH.....>	NA	NA
YEAR.....>	NA	NA
NUMBER OF DAYS IN PERIOD—> (#)		(#)
<LIQUIDITY>		
CURRENT RATIO	NA TO 1	NA TO 1
QUICK RATIO	NA TO 1	NA TO 1
<ASSET MANAGEMENT>		
AVG.COLLECTION PERIOD	NA DAYS	NA DAYS
INVENTORY TURNOVER	NA TIMES	NA TIMES
<SAFETY/LEVERAGE>		
DEBT TO WORTH	NA TO 1	NA TO 1
TIMES INTEREST EARNED	NA TIMES	NA TIMES
CF TO CRN'T POR. LTD.	NA TIMES	NA TIMES
<PROFITABILITY>		
PRF'T MARGIN ON SALES	NA %	NA %
RETRN.ON TOTAL ASSETS	NA %	NA %
RETURN ON EQUITY	NA %	NA %

Ratios

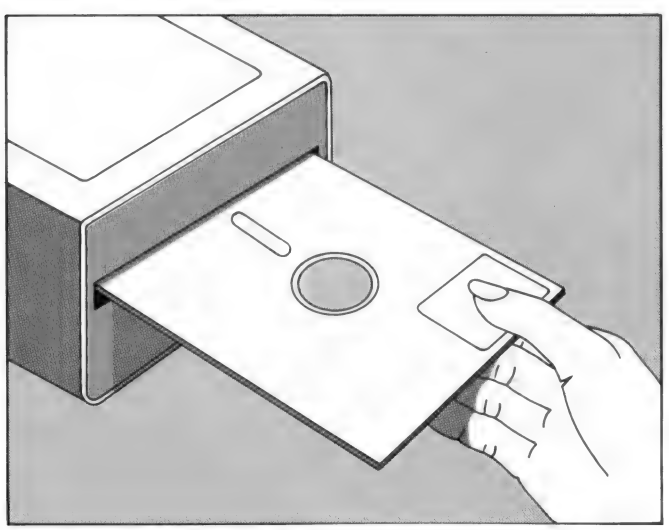
Financial ratios, grouped by ratio "families," which measure company condition and/or performance. You can add, delete, or change any of these ratios to meet your company's needs. (The ratios are discussed in Chapter 5.)

STEP 1 **Label and initialize two blank diskettes.** This is a quick but necessary step. Labeling helps you keep track of your diskettes, and initializing is required before you can store information on the diskette.

Begin by labeling the diskettes. Write an identifying code on an adhesive label; then peel the label off the backing and attach it to the top side of the diskette. We suggest that you code the diskettes using the software package and a number such as VC #1, VC #2, and so forth, for VisiCalc diskettes. You could also use a more descriptive title, such as Template.1.

The actual procedure for initializing the diskettes varies according to which computer and which VisiCalc version you use. (The procedure is called *formatting* with the Apple III.) If you are unfamiliar with the procedure for your computer and VisiCalc version, check your user's guide for specific instructions.

STEP 2 **Load the VisiCalc program** into the computer. The Program diskette (and, in the case of the Advanced Version, the Loader diskette) should be inserted into or removed from the disk drive only when the drive isn't working (when it isn't humming and the helpful red light is off). To load the VisiCalc or VisiCalc Advanced Version program into the computer's memory, start with the Apple turned off and follow the steps described on page 20.



STEP 3 **Clear the screen.** Data, labels, formulas, orroot formats could be on the VisiCalc worksheet and not appear on the screen display. To be sure the computer's memory and the spreadsheet are clear of data before you begin work, always clear the screen.

To enter
a command to clear the screen

Type /C
The prompt line will read CLEAR: TYPE Y TO CONFIRM
Type **Y**

AV **To enter**
a command to clear the screen

Type /C
The prompt line will read Clear: A or S
Type **A**
The prompt line will read Type Y to confirm
Type **Y**

Result If the screen was already clear, you won't see any change. Whenever you start a new worksheet, however, it is wise to use this command to be sure the screen is clear of all previously entered data, some of which might be on the spreadsheet but not on the area covered by the screen.

STEP 4 **Set column widths.** Column widths on the worksheet must be wide enough to hold the largest numbers you'll be entering in the template. The template requires a column width of 9 characters for the various numbers and formula values. If you are using the regular VisiCalc program, you'll set all columns to that width; but with the Advanced Version, you can set variable column widths by using a special command. That command makes the entering of labels easier and improves the overall appearance of the worksheet. For instance, label columns can be set wide, percent columns narrow, and dollar columns as wide as necessary. Therefore, we suggest (and assume) use of the variable column width feature with the Advanced Version for column A only.

To enter
a command to set column width(s)

Type /GC9 R (The position of the cursor is unimportant.)

AV **To enter**
a variable column width for easier entry of labels

Type >A1 and type **/GCC27** R

Result With the regular VisiCalc program and the Apple II or II Plus, you should see four columns, A-D, displayed on the screen. With the regular VisiCalc program and the Apple III, you should see eight columns, A-H. The VisiCalc Advanced Version display should show six columns, A-F, with column A 27 characters wide and all other columns 9 characters wide.

STEP 5 **Simplify the screen display.** The VisiCalc program provides a number of formats to display data on the screen and in printouts. One command drops from the display all numbers to the right of the decimal point. We will use this command to show dollar figures rounded off to the nearest dollar.

The VisiCalc Advanced Version program has several commands that can format the screen display and printouts. Since these can be entered after the template has been completed, we will not enter most of them with each individual step.

To enter

a command to simplify the screen display

Type /GFI

Result No change is apparent on the screen. To check that the command has been entered, type a number such as 1000.1234 (R) into cell A1. The complete number, 1000.1234, should then appear on the cell contents line at the top of the worksheet, and the rounded-off number, 1000, should appear in the entry space A1. To remove the entry you just made in cell A1, type **/B** (R).

STEP 6 **Enter a command to speed up data entry.** Normally, the VisiCalc program automatically recalculates the entire worksheet whenever an entry is made. As worksheets increase in size, this recalculation can take a few seconds, and will slow down the entering of data. To speed up data entry, you can change the recalculation feature from automatic to manual. On manual, it recalculates only when you press the **SHIFT** and **!** keys simultaneously.

To enter

a command to change recalculation from automatic to manual

Type /GR

Prompt line will read RECALC: A M
Type **M**

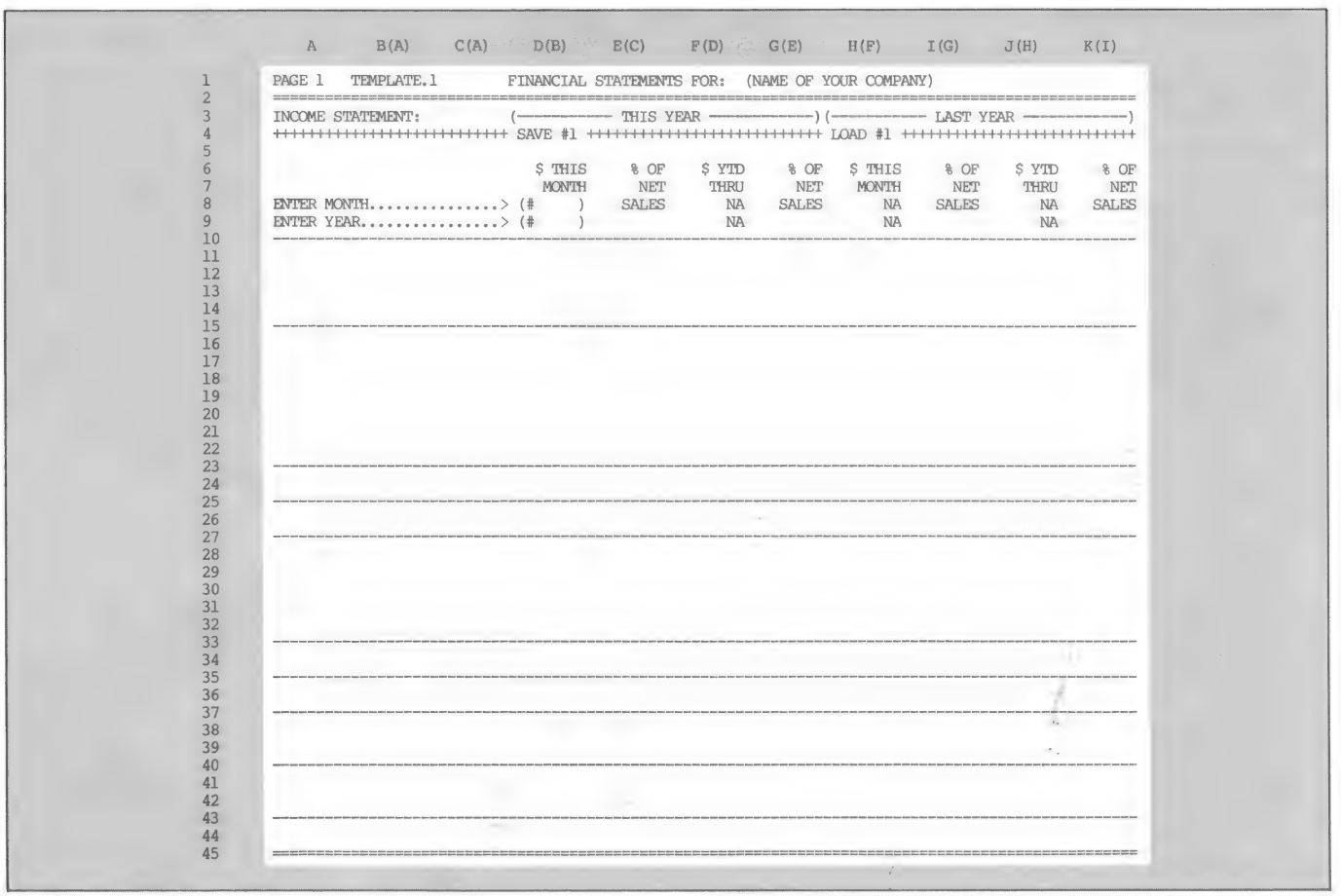
Result Although no change appears on the screen, the recalculation feature should now work only at your command. This means that you can enter data more quickly as you build the template on the computer. To return the program at any time to automatic recalculation, type **/GRA**. But we suggest that you leave recalculation on manual while you build the template.

Step One

Enter the headings, dates, and ruled lines for Template.1 and the income statement. The headings give the name of the statement, the dates for the current month and year to date (YTD) covered, and the same month and year to date period of last year. Whenever you enter a month and year in cells D(B)8 and D(B)9, the dates are automatically entered throughout the template, and adjusted to give last year's date in the appropriate columns. Labels also identify the contents of each column.

The DIF line (row 4) is designed to guide you if you want to use the DIF command to move data from this template to another. You can also use the DIF command to save data, or to adjust it for different years. For example, you can transfer data from the THIS YEAR column to the LAST YEAR column when it is time to do so.

The ruled lines are added to make the final template and printed-out reports easier to read. If your Apple has function keys, you might want to program one key to put in a single ruled line and another key to put in a double ruled line.



```
      A       B(A)    C(A)    D(B)     E(C)     F(D)     G(E)     H(F)     I(G)     J(H)     K(I)
1     PAGE 1   TEMPLATE.1        FINANCIAL STATEMENTS FOR:  (NAME OF YOUR COMPANY)
2     ==========================================================================================
3     INCOME STATEMENT:          (---------- THIS YEAR ----------)(---------- LAST YEAR ----------)
4     ++++++++++++++++++++++++++ SAVE #1 ++++++++++++++++++++++++++ LOAD #1 ++++++++++++++++++++++++++
5
6                                $ THIS     % OF     $ YTD     % OF     $ THIS     % OF     $ YTD     % OF
7                                 MONTH      NET      THRU      NET      MONTH      NET      THRU      NET
8     ENTER MONTH.............> (#     )    SALES        NA    SALES         NA    SALES        NA    SALES
9     ENTER YEAR..............> (#     )                 NA                NA                NA
10    ------------------------------------------------------------------------------------------
11
12
13
14
15    ------------------------------------------------------------------------------------------
16
17
18
19
20
21
22
23    ------------------------------------------------------------------------------------------
24
25    ------------------------------------------------------------------------------------------
26
27    ------------------------------------------------------------------------------------------
28
29
30
31
32
33    ------------------------------------------------------------------------------------------
34
35    ------------------------------------------------------------------------------------------
36
37    ------------------------------------------------------------------------------------------
38
39
40    ------------------------------------------------------------------------------------------
41
42
43    ------------------------------------------------------------------------------------------
44
45    ==========================================================================================
```

ROW 1 **Title of template and company name.** Identify the statements about to be entered any way you would like. If you keep the title limited to one row, the row numbers to follow will remain in order.

To enter

labels to identify the template and your company's name

phantom instructions to identify the lower right corner of the income statement, i.e., K(I)45

Type >**A1** and type **PAGE 1(S)(S)(S)PRINT TO K(I)45(S)(S)**>**A46**
>**B**(A)**1** and type **FINANCIAL** →
>**C**(A)**1** and type **"(S)STATEMEN** →
>**D**(B)**1** and type **TS FOR:** →
>**E**(C)**1** and type **"(NAME OF** →
>**F**(D)**1** and type **YOUR COMP** →
>**G**(E)**1** and type **ANY)** R

ROW 2 **Double ruled lines** are entered across the screen. These ruled lines separate major categories and make the worksheet easier to read. There are several ways to enter ruled lines; here you'll use a method that allows them to be moved with the DIF command.

To enter

double ruled lines from column A to column K(I) on rows 2 and 45

Type >**A2** and type "= = = = = = = = = (R) (quotation mark followed by 9 equals signs), or if using the Advanced Version, type "= (R) (quotation mark followed by 27 equals signs).

To replicate

from one cell to a range

Type >**A2** and type /**R** (R) **B2.K**(I)**2** (R)

from one range to other ranges

Type >**A2** and type /**R.K**(I)**2** (R) **A45** (R)

Result The first step should have put a double ruled line in cell A2 (row 2); the second step should have replicated it across the screen to column K(I). The last step should have put the double ruled line on row 45.

ROW 3 **Headings for statement and years covered** show that the first part of your template is the income statement, and that the years covered are this year and last year.

To enter

labels to identify this statement as the income statement, and columns D(B) through G(E) as this year's figures, columns H(F) through K(I) as last year's figures

Type >**A3** and type **INCOME ST** (→)
>**B**(A)**3** and type **ATEMENT:** (→)(→)
>**D**(B)**3** and type **"(S)(-------** (→)
>**E**(C)**3** and type **"---(S)THIS** (→)
>**F**(D)**3** and type **YEAR(S)----** (→)
>**G**(E)**3** and type **"--------)** (→)
>**H**(F)**3** and type **"(S)(-------** (→)
>**I**(G)**3** and type **"---(S)LAST** (→)
>**J**(H)**3** and type **YEAR(S)----** (→)
>**K**(I)**3** and type **"--------)** (R)

ROW 4 **Enter a line where the cursor will be positioned when you use the DIF command** to save current month and year information. Next year, this information can be transferred to the present template, and loaded under the column for last year's results. The line also contains some visible and phantom prompts. The prompts SAVE #1 and LOAD #1 show you where to place the cursor when using the DIF command to save or load these files.

To enter

a line to help you use the DIF command by showing you where to position the cursor, and phantom instructions which remind you what to type

Type >**A4** and type **"+ + + + + + + + + (S)DIF LINE** (→)
>**D**(B)**4** and type **"(S)SAVE #1(S)/S#SDIF1 (R)G**(E)**49(RR)** (→)(→)(→)(→)
>**H**(F)**4** and type **"(S)LOAD #1(S)/S#LDIF1(RR)** (R)

To replicate

from one cell to a range

Type >**A4** and type /**R** (R) **B4.C**(A)**4** (R)
>**A4** and type /**R** (R) **E**(C)**4.G**(E)**4** (R)
>**A4** and type /**R** (R) **I**(G)**4.K**(I)**4** (R)

Result You will now have a DIF line of plus (+) signs on row 4, along with the prompts SAVE #1 and LOAD #1. To check that the line is entered, you can position the cursor over either prompt. Phantom instructions should then appear on the cell contents line.

ROW 6 **Headings** are entered for the columns on the income statement, indicating dates, dollar signs, and percent signs.

To enter

labels to identify the columns

Type >**D**(B)**6** and type /**FR "$ THIS** (→)
>**E**(C)**6** and type /**FR "% OF** (→)
>**F**(D)**6** and type /**FR "$ YTD** (→)
>**G**(E)**6** and type /**FR "% OF** (R)

To replicate

Type >**D**(B)**6** and type /**R.G**(E)**6** (R) **H**(F)**6** (R)

ROW 7 **Headings** continue for columns on the income statement (dates, dollar signs, and percent signs).

To enter

labels to identify the columns

Type >**D**(B)**7** and type **/FR MONTH** ⏎
>**E**(C)**7** and type **/FR NET** ⏎
>**F**(D)**7** and type **/FR THRU** ⏎
>**G**(E)**7** and type **/FR NET** ⏎

To replicate

Type >**D**(B)**7** and type **/R. G**(E)**7** ⏎ **H**(F)**7** ⏎

ROW 8 **Headings** and formulas to bring down the number of the month are entered in columns D(B), F(D), H(F), and J(H).

To enter

labels to identify column contents
formulas in cells F(D)8, H(F)8, and J(H)8 that will automatically carry the number of the month entered in D(B)8 to these other columns

Type >**A8** and type **ENTER MON** ⏎
>**B**(A)**8** and type **TH.....** ⏎
>**C**(A)**8** and type **".....>** ⏎
>**D**(B)**8** and type **/FR"(#(S)(S)(S)(S)(S))** ⏎
>**E**(C)**8** and type **/FR SALES** ⏎
>**F**(D)**8** and type **@IF(D**(B)**8>0,D**(B)**8,@NA** ⏎
>**G**(E)**8** and type **/FR SALES** ⏎

To replicate

from one range to another range

Type >**F**(D)**8** and type **/R.G**(E)**8** ⏎ **H**(F)**8** ⏎
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **NN**

>**F**(D)**8** and type **/R.G**(E)**8** ⏎ **J**(H)**8** ⏎
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **NN**

Result The formulas will now duplicate the number of the month entered in D(B) into the other columns, so that you only have to enter the month once.

ROW 9 **Headings** and formulas to bring down the number of the year are now entered in columns D(B), F(D), H(F), and J(H).

To enter

a label and arrow to point to the year
formulas in cells F(D)9, H(F)9 and J(H)9 that will automatically carry the number of the year entered in D(B)9 to F(D)9, and convert that date to last year's date in columns H(F)9 and J(H)9

Type >**A9** and type **ENTER YEA** ⏎
>**B**(A)**9** and type **R.....** ⏎
>**C**(A)**9** and type **".....>** ⏎⏎
>**D**(B)**9** and type **/FR"(#(S)(S)(S)(S)(S))** ⏎
>**F**(D)**9** and type **@IF(D**(B)**9>0,D**(B)**9,@NA** ⏎⏎
>**H**(F)**9** and type **@IF(D**(B)**9>0,D**(B)**9-1,@NA** ⏎

To replicate

from one cell to another cell

Type >**H**(F)**9** and type **/R** ⏎ **J**(H)**9** ⏎
Prompt line will read N=NO CHANGE
R=RELATIVE
Type **NN**

Result The formulas will now automatically duplicate the number of the year you enter on the template. They will also enter last year's date.

ROW 10 **Single ruled lines** are entered across the screen to separate major categories on the income statement. These lines will be entered with the same replication techniques used previously.

To enter

single ruled lines from column A to column E(C) on rows 10, 15, 23, 25, 27, 33, 35, 37, 40, and 43

Type >**A10** and type **"---------** ⏎ (quotation mark followed by 9 minus signs), or if using the Advanced Version, type **"----------** ⏎ (quotation mark followed by 27 minus signs).

To replicate

from one cell to a range

Type >**A10** and type /**R** (R) **B10.K**(I)**10** (R)

from one range to another range

Type >**A10** and type /**R .K**(I)**10** (R) **A15** (R)
>**A10** and type /**R .K**(I)**10** (R) **A23** (R)
>**A10** and type /**R .K**(I)**10** (R) **A25** (R)
>**A10** and type /**R .K**(I)**10** (R) **A27** (R)
>**A10** and type /**R .K**(I)**10** (R) **A33** (R)
>**A10** and type /**R .K**(I)**10** (R) **A35** (R)
>**A10** and type /**R .K**(I)**10** (R) **A37** (R)
>**A10** and type /**R .K**(I)**10** (R) **A40** (R)
>**A10** and type /**R .K**(I)**10** (R) **A43** (R)

Result The first step should have put a single ruled line into cell A10, and the second step should have replicated it out to column K(I). The last step should have put the single ruled line into rows 15, 23, 25, 27, 33, 35, 37, 40, and 43.

Step Two

Enter labels for the income and expense line items in columns A through C of Template.1 (column A if you are using the Advanced Version). You can adapt these line items to fit your needs, using the supplemental template described on pages 144–146. With that template, you can expand or break down your sales revenue (by product or market), cost of goods, general and administrative expense, or selling expense. The complete breakdown can then be manually transferred from the supplemental template to this statement. Do *not* use the DIF command to transfer the information, since it would erase formulas in rows where you will be entering and transferring information.

Note: If you add or delete rows at this point, all subsequent row numbers throughout this chapter will be affected. For that reason, we suggest you first enter the entire template as described, and make any necessary changes later.

```
     A      B(A)    C(A)     D(B)     E(C)     F(D)     G(E)     H(F)     I(G)     J(H)     K(I)
1    PAGE 1   TEMPLATE.1          FINANCIAL STATEMENTS FOR:  (NAME OF YOUR COMPANY)
2    ==========================================================================================
3    INCOME STATEMENT:          (---------- THIS YEAR ----------)(---------- LAST YEAR ----------)
4    ++++++++++++++++++++++++++ SAVE #1 ++++++++++++++++++++++++++ LOAD #1 ++++++++++++++++++++++++++
5
6                                 $ THIS     % OF     $ YTD     % OF     $ THIS     % OF     $ YTD     % OF
7                                  MONTH      NET      THRU      NET      MONTH      NET      THRU      NET
8    ENTER MONTH.....:.....> (#     )  SALES      NA    SALES       NA    SALES       NA    SALES
9    ENTER YEAR.....:.....> (#     )               NA                NA                NA
10   ------------------------------------------------------------------------------------------
11   <SALES>
12   GROSS SALES
13   DISCOUNTS,RETURNS & ALLOW.
14   NET SALES REVENUE
15   ------------------------------------------------------------------------------------------
16   <COST OF GOODS SOLD>
17   .........................
18   .........................
19   .........................
20   .........................
21   .........................
22   .........................
23   ------------------------------------------------------------------------------------------
24   TOTAL COST OF GOODS SOLD
25   ------------------------------------------------------------------------------------------
26   GROSS PROFIT
27   ------------------------------------------------------------------------------------------
28   <OPERATING EXPENSES>
29   GENERAL,ADMIN. & SELLING
30   INTEREST EXPENSE
31   DEPRECIATION
32   .........................
33   ------------------------------------------------------------------------------------------
34   TOTAL OPERATING EXPENSES
35   ------------------------------------------------------------------------------------------
36   OPERATING INCOME/LOSS
37   ------------------------------------------------------------------------------------------
38   OTHER INCOME
39   OTHER EXPENSE
40   ------------------------------------------------------------------------------------------
41   PROFIT BEFORE TAXES
42   TAXES
43   ------------------------------------------------------------------------------------------
44   NET INCOME/LOSS (AFT.TAXES)
45   ==========================================================================================
```

ROWS 11–14 **Sales** lines include gross sales, discounts, returns, and net sales revenue. Most income statements carry only one line for gross sales, but you can make a supplemental template and break sales down by product line, division, market, or whatever. A sales breakdown allows you to monitor individual parts of the sales pattern, and gives a more accurate indication of its strengths and weaknesses. While a sales breakdown is very useful, we suggest that you build a supplement only after you complete the entire template.

To enter

labels to identify gross sales, discounts, returns, and allowances, and net sales revenue

Type >**A11** and type "<**SALES**> (R)

>**A12** and type **GROSS SAL** (→)
>**B**(A)**12** and type **ES** (R)

>**A13** and type **DISCOUNTS** (→)
>**B**(A)**13** and type **",RETURNS** (→)
>**C**(A)**13** and type **"& ALLOW.** (R)

>**A14** and type **NET SALES** (→)
>**B**(A)**14** and type **"(S)REVENUE** (R)

ROW 16 **Cost of goods sold** can be expanded if more lines are necessary (wait until Template.1 is finished and then come back). Or, if you prefer, the supplemental income statement template can be adapted and used to give more detail (see page 144). Tips on expanding the income statement by adding rows are given on page 143.

To enter

labels to identify the contents of rows 16 through 22

Type >**A16** and type "<**COST OF** (→)
>**B**(A)**16** and type **GOODS SOL** (→)
>**C**(A)**16** and type **D>** (R)

ROWS 17–22 **Label entry spaces** can be filled in now or later with your own cost of goods sold line items. You may need more or fewer lines than the six provided. First complete Template.1, including the income statement, balance sheet, and key numbers, and then come back to this section to make any necessary changes. This sequence — completing the template and then making revisions — will keep the row numbers throughout the remainder of this chapter correct.

To enter

data entry spaces to be filled in now or later with your own specific cost of goods line items (up to 27 characters long)

Type >**A17** and type /-. (R)

To replicate

from one cell to a range (This step isn't necessary for Advanced Version users.)

Type >**A17** and type /**R** (R) **B17.C**(A)**17** (R)

from one range to another range

Type >**A17** and type /**R.C**(A)**17**(R)**A18.A22** (R)

ROW 24 **Total cost of goods** is one of the rows used in the ratio section of the template. Again, don't add or delete rows above the total cost of goods row until the entire template is completed. Then you can add or delete, and the computer will automatically adjust the formulas.

To enter

a label to identify total cost of goods

Type >**A24** and type **TOTAL COS** (→)
>**B**(A)**24** and type **T OF GOOD** (→)
>**C**(A)**24** and type **S SOLD** (R)

ROW 26 **Gross profit** will be calculated later by subtracting cost of goods sold from net sales revenue. Enter only the label now.

To enter

a label to identify gross profit

Type >**A26** and type **GROSS PRO** (→)
>**B**(A)**26** and type **FIT** (R)

ROWS 28–32 **Operating expenses** includes several line items. Some specific line items are suggested, but you may want to enter your own. One item — general, administrative, and selling expense — is a very large category of expense. Later, you will probably want to break this category down by using a supplemental template such as the one given on page 145.

To enter

labels to identify the major category of operating expenses and some of its specific line items

Type >**A28** and type "<**OPERATIN** →
>**B**(A)**28** and type **G EXPENSE** →
>**C**(A)**28** and type **S** >R

>**A29** and type **GENERAL,A** →
>**B**(A)**29** and type **DMIN. & S** →
>**C**(A)**29** and type **ELLING** R

>**A30** and type **INTEREST** →
>**B**(A)**30** and type **EXPENSE** R

>**A31** and type **DEPRECIAT** →
>**B**(A)**31** and type **ION** R

>**A32** and type /-. R

To replicate

from one cell to a range (This step not necessary for Advanced Version users.)

Type >**A32** and type /**R** R **B32.C**(A)**32** R

ROW **34** **Total operating expenses** is the sum of all rows above containing operating expense line items.

To enter

a label to identify total operating expenses

Type >**A34** and type **TOTAL OPE** →
>**B**(A)**34** and type **RATING EX** →
>**C**(A)**34** and type **PENSES** R

ROW **36** **Operating income/loss** is gross profit minus total operating expenses.

To enter

a label to identify operating income/loss

Type >**A36** and type **OPERATING** →
>**B**(A)**36** and type "**(S)INCOME/L** →
>**C**(A)**36** and type **OSS** R

ROW **38** **Other income** includes all income derived from sources other than normal operations, such as income from royalties, patents, and so forth.

To enter

a label to identify other income

Type >**A38** and type **OTHER INC** →
>**B**(A)**38** and type **OME** R

ROW **39** **Other expense** includes all expenses not associated with normal operations.

To enter

a label to identify other expense

Type >**A39** and type **OTHER EXP** →
>**B**(A)**39** and type **ENSE** R

ROW **41** **Profit before taxes** is total operating income plus other income, minus other expenses.

To enter

a label to identify profit before taxes

Type >**A41** and type **PROFIT BE** →
>**B**(A)**41** and type **FORE TAXE** →
>**C**(A)**41** and type **S** R

ROW **42** **Taxes** includes taxes paid to all levels of government, including local, state, and federal.

To enter

a label to identify taxes

Type >**A42** and type **TAXES** R

ROW **44** **Net income or loss after taxes** is affectionately known as the bottom line, what's left after paying all of the bills.

To enter

a label to identify net income or loss after taxes

Type >**A44** and type **NET INCOM** →
>**B**(A)**44** and type **E/LOSS(S)(A** →
>**C**(A)**44** and type **FT.TAXES)** R

Step Three

Enter data entry spaces and formulas for entering data and calculating totals in column D(B). The data entry spaces tell you where to place data when you fill in the template. The formulas you'll enter in this section will calculate sales, expense, and profit figures in column D(B).

```
      A       B(A)     C(A)     D(B)      E(C)      F(D)      G(E)      H(F)      I(G)      J(H)      K(I)
1     PAGE 1   TEMPLATE.1        FINANCIAL STATEMENTS FOR:  (NAME OF YOUR COMPANY)
2     ==========================================================================================================
3     INCOME STATEMENT:          (---------- THIS YEAR ----------)(---------- LAST YEAR ----------)
4     ++++++++++++++++++++++++++ SAVE #1 ++++++++++++++++++++++++ LOAD #1 ++++++++++++++++++++++++++
5
6                                 $ THIS      % OF      $ YTD      % OF      $ THIS      % OF      $ YTD      % OF
7                                  MONTH       NET       THRU       NET       MONTH       NET       THRU       NET
8     ENTER MONTH.............> (#     )    SALES        NA       SALES        NA       SALES        NA       SALES
9     ENTER YEAR..............> (#     )                 NA                    NA                    NA
10    ----------------------------------------------------------------------------------------------------------
11    <SALES>
12    GROSS SALES                ($     )
13    DISCOUNTS,RETURNS & ALLOW. ($     )
14    NET SALES REVENUE                0
15    ----------------------------------------------------------------------------------------------------------
16    <COST OF GOODS SOLD>
17    .........................  ($     )
18    .........................  ($     )
19    .........................  ($     )
20    .........................  ($     )
21    .........................  ($     )
22    .........................  ($     )
23    ----------------------------------------------------------------------------------------------------------
24    TOTAL COST OF GOODS SOLD         0
25    ----------------------------------------------------------------------------------------------------------
26    GROSS PROFIT                     0
27    ----------------------------------------------------------------------------------------------------------
28    <OPERATING EXPENSES>
29    GENERAL,ADMIN. & SELLING   ($     )
30    INTEREST EXPENSE           ($     )
31    DEPRECIATION               ($     )
32    .........................  ($     )
33    ----------------------------------------------------------------------------------------------------------
34    TOTAL OPERATING EXPENSES         0
35    ----------------------------------------------------------------------------------------------------------
36    OPERATING INCOME/LOSS            0
37    ----------------------------------------------------------------------------------------------------------
38    OTHER INCOME               ($     )
39    OTHER EXPENSE              ($     )
40    ----------------------------------------------------------------------------------------------------------
41    PROFIT BEFORE TAXES              0
42    TAXES                      ($     )
43    ----------------------------------------------------------------------------------------------------------
44    NET INCOME/LOSS (AFT.TAXES)      0
45    ==========================================================================================================
```

COLUMN D(B) **Enter data entry spaces** in the current month's dollar column. There are as many different ways to indicate data entry spaces as your imagination allows. For instance, they can be entered as $, $. , $....., or .....; anything up to 9 characters wide.

To enter

a data entry space where data can be entered on the computer or by hand on a printed-out blank template

Type >**D**(B)**12** and type **/FR "($(S)(S)(S)(S)(S)(S))** R

To replicate

the data entry space

Type >**D**(B)**12** and type **/R** R **D**(B)**13** R
>**D**(B)**12** and type **/R** R **D**(B)**17.D**(B)**22** R
>**D**(B)**12** and type **/R** R **D**(B)**29.D**(B)**32** R
>**D**(B)**12** and type **/R** R **D**(B)**38.D**(B)**39** R
>**D**(B)**12** and type **/R** R **D**(B)**42** R

COLUMN D(B) **Enter formulas** in this column that will fill in line items in categories such as cost of goods sold, or calculate line items such as gross profit.

To enter

formulas to complete all data entry spaces in column D(B)

Type >**D**(B)**14** and type +**D**(B)**12-D**(B)**13** (R)
>**D**(B)**24** and type **@SUM(D**(B)**23.D**(B)**15)** (R)
>**D**(B)**26** and type +**D**(B)**14-D**(B)**24** (R)
>**D**(B)**34** and type **@SUM(D**(B)**33.D**(B)**27)** (R)
>**D**(B)**36** and type +**D**(B)**26-D**(B)**34** (R)
>**D**(B)**41** and type +**D**(B)**36-@SUM(D**(B)**37.D**(B)**40)** (R)
>**D**(B)**44** and type +**D**(B)**41-D**(B)**42** (R)

Step Four

Enter and replicate the formula used to calculate operating ratios. This will show all income and expense items as percentages of net sales.

```
     A       B(A)    C(A)    D(B)      E(C)     F(D)     G(E)     H(F)     I(G)     J(H)     K(I)
1    PAGE 1   TEMPLATE.1          FINANCIAL STATEMENTS FOR:  (NAME OF YOUR COMPANY)
2    ==========================================================================================
3    INCOME STATEMENT:          (---------- THIS YEAR ----------)(---------- LAST YEAR ----------)
4    ++++++++++++++++++++++++++ SAVE #1 ++++++++++++++++++++++++++ LOAD #1 ++++++++++++++++++++++++++
5
6                                        $ THIS      % OF     $ YTD      % OF     $ THIS      % OF     $ YTD      % OF
7                                        MONTH       NET      THRU       NET      MONTH       NET      THRU       NET
8    ENTER MONTH.............> (#     )  SALES       NA       SALES      NA       SALES       NA       SALES
9    ENTER YEAR..............> (#     )               NA                  NA                   NA                  NA
10   ------------------------------------------------------------------------------------------
11   <SALES>
12   GROSS SALES                    ($     )      0
13   DISCOUNTS,RETURNS & ALLOW.     ($     )      0
14   NET SALES REVENUE                     0      0
15   ------------------------------------------------------------------------------------------
16   <COST OF GOODS SOLD>
17   ..........................     ($     )      0
18   ..........................     ($     )      0
19   ..........................     ($     )      0
20   ..........................     ($     )      0
21   ..........................     ($     )      0
22   ..........................     ($     )      0
23   ------------------------------------------------------------------------------------------
24   TOTAL COST OF GOODS SOLD              0      0
25   ------------------------------------------------------------------------------------------
26   GROSS PROFIT                          0      0
27   ------------------------------------------------------------------------------------------
28   <OPERATING EXPENSES>
29   GENERAL,ADMIN. & SELLING       ($     )      0
30   INTEREST EXPENSE               ($     )      0
31   DEPRECIATION                   ($     )      0
32   ..........................     ($     )      0
33   ------------------------------------------------------------------------------------------
34   TOTAL OPERATING EXPENSES              0      0
35   ------------------------------------------------------------------------------------------
36   OPERATING INCOME/LOSS                 0      0
37   ------------------------------------------------------------------------------------------
38   OTHER INCOME                   ($     )      0
39   OTHER EXPENSE                  ($     )      0
40   ------------------------------------------------------------------------------------------
41   PROFIT BEFORE TAXES                   0      0
42   TAXES                          ($     )      0
43   ------------------------------------------------------------------------------------------
44   NET INCOME/LOSS (AFT.TAXES)           0      0
45   ==========================================================================================
```

COLUMN E(C) **Enter formulas** to calculate operating ratios, which show each of the current month's line items as a percentage of net sales. The formula will calculate the operating ratio for gross sales first. Then it will be replicated and will calculate the operating ratios for the remaining line items.

To enter

a formula that will divide gross sales by net sales revenue to show gross sales as a percentage of net sales.

The formula will multiply the percentage by 100 so it reads as a whole number rather than as a decimal. Embed the formula in an @IF statement so you won't get an error message on the screen or printout if D(B)14 is 0. (See TIP below.) If you are using the Advanced Version, you can display percentages with a percent sign. The command used to format the cell this way also multiplies the decimal percentage by 100 to display it as a whole number. If you want to use this format, enter the typing instructions under [AV] — don't enter the first set given for the regular version. You will only have to enter this format once since it will be replicated along with other cell contents.

Type >**E**(C)**12** and type **@IF(D**(B)**12<>0,100*(D**(B)**12/D**(B)**14),0** [R]

VISICALC TIPS Eliminating ERROR messages on your screen display and printouts

Whenever a template is prepared that uses division formulas, the blank template will have ERROR appearing in the cells containing those formulas. The reason is that any number divided by 0 generates this message automatically. When you enter data, these messages will disappear. If you want to clean up your template so these messages don't appear when it is blank, all you have to do is to embed the formulas in @IF statements. For instance, the formula +A1/A2 will result in an error message if cell A2 has no value. By embedding the formula in an @IF statement such as @IF(A2<>0,A1/A2,0), you will see a 0 until data are entered in cell A2. The formula would read, "If A2 is less than or greater than zero, divide A1 by A2. If it isn't, show 0."

[AV] **To enter**

a format to show %

Type >**C12** and type **/AV%** [R][R]
>**C12** and type **@IF B12<>0, B12/B14,0**

To replicate

the formula into all other rows in column E(C) that contain line items

Type >**E**(C)**12** and type **/R** [R] **E**(C)**13.E**(C)**14** [R]
Prompt line reads N=NO CHANGE R=RELATIVE
Type **RRN**

>**E**(C)**12** and type **/R** [R] **E**(C)**17.E**(C)**22** [R]
Prompt line reads N=NO CHANGE R=RELATIVE
Type **RRN**

>**E**(C)**12** and type **/R** [R] **E**(C)**24** [R]
Prompt line reads N=NO CHANGE R=RELATIVE
Type **RRN**

>**E**(C)**12** and type **/R** [R] **E**(C)**26** [R]
Prompt line reads N=NO CHANGE R=RELATIVE
Type **RRN**

>**E**(C)**12** and type **/R** [R] **E**(C)**29.E**(C)**32** [R]
Prompt line reads N=NO CHANGE R=RELATIVE
Type **RRN**

>**E**(C)**12** and type **/R** [R] **E**(C)**34** [R]
Prompt line reads N=NO CHANGE R=RELATIVE
Type **RRN**

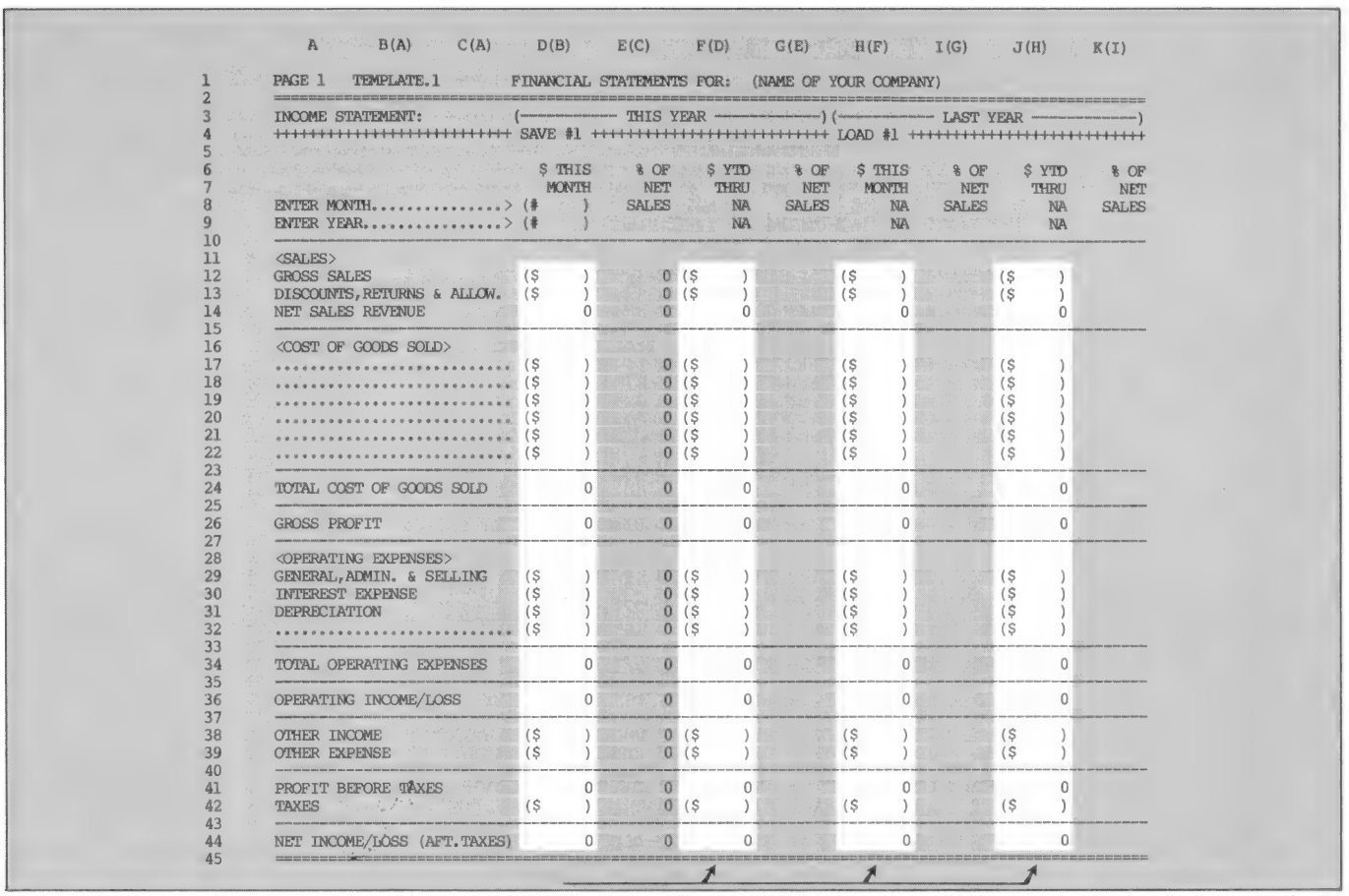
>**E**(C)**12** and type **/R** [R] **E**(C)**36** [R]
Prompt line reads N=NO CHANGE R=RELATIVE
Type **RRN**

>**E**(C)**12** and type **/R** [R] **E**(C)**38.E**(C)**39** [R]
Prompt line reads N=NO CHANGE R=RELATIVE
Type **RRN**

>**E**(C)**12** and type **/R** [R] **E**(C)**41.E**(C)**42** [R]
Prompt line reads N=NO CHANGE R=RELATIVE
Type **RRN**

>**E**(C)**12** and type **/R** [R] **E**(C)**44** [R]
Prompt line reads N=NO CHANGE R=RELATIVE
Type **RRN**

Replicate the dollar column entered at column D(B) to columns F(D), H(F), and J(H).



	A	B(A)	C(A)	D(B)	E(C)	F(D)	G(E)	H(F)	I(G)	J(H)	K(I)
1	PAGE 1	TEMPLATE.1		FINANCIAL STATEMENTS FOR:	(NAME OF YOUR COMPANY)						
2											
3	INCOME STATEMENT:			(---------- THIS YEAR ----------)		(---------- LAST YEAR ----------)					
4	++++++++++++++++++++++++++			SAVE #1 ++++++++++++++++++++++++++		LOAD #1 ++++++++++++++++++++++++++					
5											
6				$ THIS	% OF	$ YTD	% OF	$ THIS	% OF	$ YTD	% OF
7				MONTH	NET	THRU	NET	MONTH	NET	THRU	NET
8	ENTER MONTH.....>			(#)	SALES	NA	SALES	NA	SALES	NA	SALES
9	ENTER YEAR.....>			(#)		NA		NA		NA	
10											
11	<SALES>										
12	GROSS SALES			($)	0	($)		($)		($)	
13	DISCOUNTS,RETURNS & ALLOW.			($)	0	($)		($)		($)	
14	NET SALES REVENUE			0	0	0		0		0	
15											
16	<COST OF GOODS SOLD>										
17	.....			($)	0	($)		($)		($)	
18	.....			($)	0	($)		($)		($)	
19	.....			($)	0	($)		($)		($)	
20	.....			($)	0	($)		($)		($)	
21	.....			($)	0	($)		($)		($)	
22	.....			($)	0	($)		($)		($)	
23											
24	TOTAL COST OF GOODS SOLD			0	0	0		0		0	
25											
26	GROSS PROFIT			0	0	0		0		0	
27											
28	<OPERATING EXPENSES>										
29	GENERAL,ADMIN. & SELLING			($)	0	($)		($)		($)	
30	INTEREST EXPENSE			($)	0	($)		($)		($)	
31	DEPRECIATION			($)	0	($)		($)		($)	
32	.....			($)	0	($)		($)		($)	
33											
34	TOTAL OPERATING EXPENSES			0	0	0		0		0	
35											
36	OPERATING INCOME/LOSS			0	0	0		0		0	
37											
38	OTHER INCOME			($)	0	($)		($)		($)	
39	OTHER EXPENSE			($)	0	($)		($)		($)	
40											
41	PROFIT BEFORE TAXES			0	0	0		0		0	
42	TAXES			($)	0	($)		($)		($)	
43											
44	NET INCOME/LOSS (AFT.TAXES)			0	0	0		0		0	
45											

COLUMNS G(E), I(G), K(I) **Replicate column E(C)** from row 10 to row 45 into columns G(E), I(G), and K(I).

To replicate

from one cell to a range

Type >**E**(C)**10** and type /**R.E**(C)**45** (R) **G**(E)**10** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type 66 **R**s

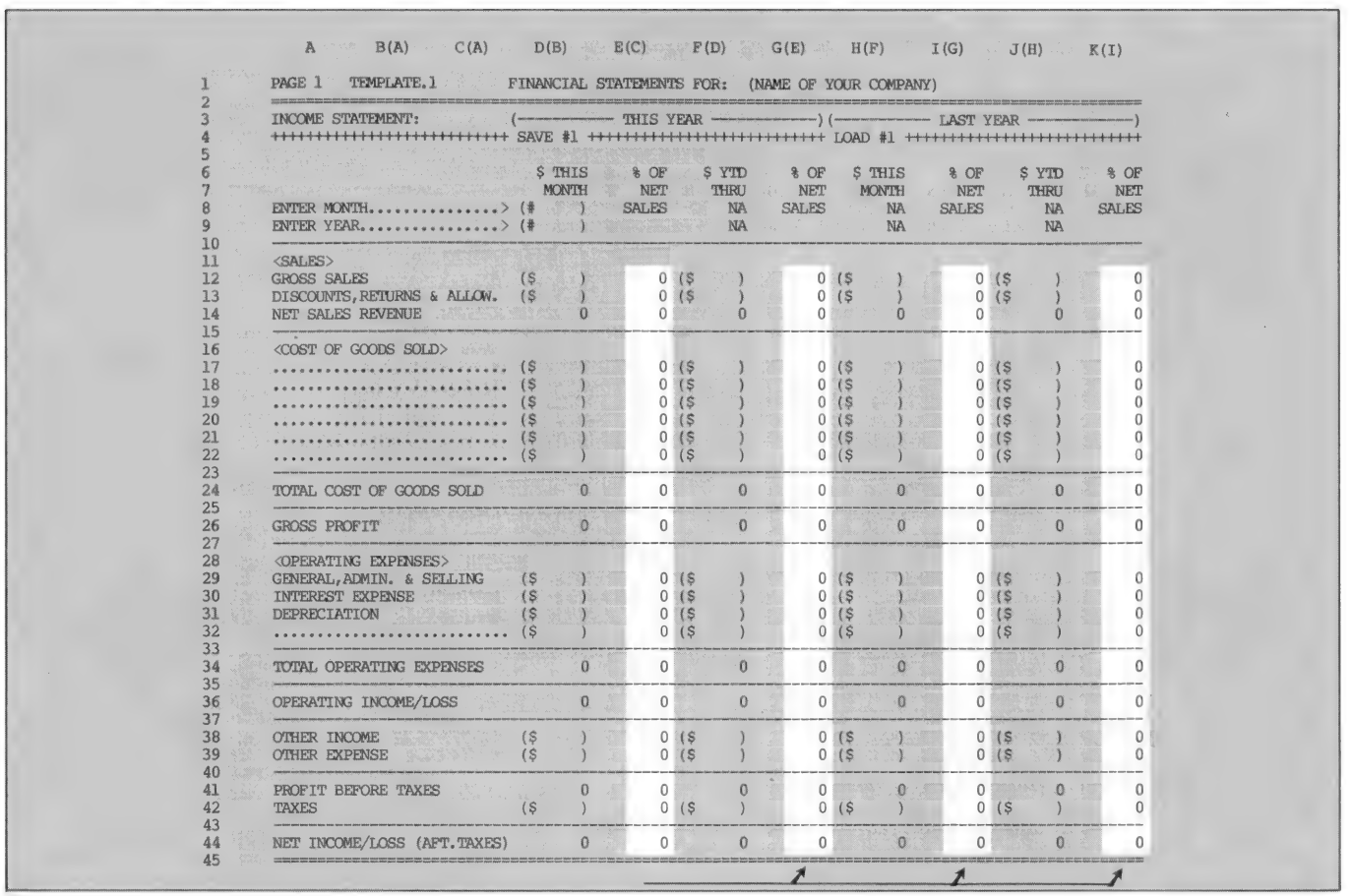
>**E**(C)**10** and type /**R.E**(C)**45** (R) **I**(G)**10** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type 66 **R**s

>**E**(C)**10** and type /**R.E**(C)**45** (R) **K**(I)**10** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type 66 **R**s

Result Column E(C) with data entry spaces and formulas should be reproduced exactly in columns G(E), I(G), and K(I).

Step Six

Replicate the percent column entered at column E(C) to columns G(E), I(G), and K(I).



	A	B(A)	C(A)	D(B)	E(C)	F(D)	G(E)	H(F)	I(G)	J(H)	K(I)
1	PAGE 1 TEMPLATE.1			FINANCIAL STATEMENTS FOR: (NAME OF YOUR COMPANY)							
2											
3	INCOME STATEMENT:			(———— THIS YEAR ————)			(———— LAST YEAR ————)				
4	++++++++++++++++++++++++			SAVE #1 ++++++++++++++++++++++++			LOAD #1 ++++++++++++++++++++++++				
5											
6				$ THIS	% OF	$ YTD	% OF	$ THIS	% OF	$ YTD	% OF
7				MONTH	NET	THRU	NET	MONTH	NET	THRU	NET
8	ENTER MONTH.....>		(#)		SALES	NA	SALES	NA	SALES	NA	SALES
9	ENTER YEAR.....>		(#)			NA		NA		NA	
10											
11	<SALES>										
12	GROSS SALES		($)	0	($)	0	($)	0	($)	0	
13	DISCOUNTS,RETURNS & ALLOW.		($)	0	($)	0	($)	0	($)	0	
14	NET SALES REVENUE			0	0	0	0	0	0	0	
15											
16	<COST OF GOODS SOLD>										
17	.....		($)	0	($)	0	($)	0	($)	0	
18	.....		($)	0	($)	0	($)	0	($)	0	
19	.....		($)	0	($)	0	($)	0	($)	0	
20	.....		($)	0	($)	0	($)	0	($)	0	
21	.....		($)	0	($)	0	($)	0	($)	0	
22	.....		($)	0	($)	0	($)	0	($)	0	
23											
24	TOTAL COST OF GOODS SOLD			0	0	0	0	0	0	0	
25											
26	GROSS PROFIT			0	0	0	0	0	0	0	
27											
28	<OPERATING EXPENSES>										
29	GENERAL,ADMIN. & SELLING		($)	0	($)	0	($)	0	($)	0	
30	INTEREST EXPENSE		($)	0	($)	0	($)	0	($)	0	
31	DEPRECIATION		($)	0	($)	0	($)	0	($)	0	
32	.....		($)	0	($)	0	($)	0	($)	0	
33											
34	TOTAL OPERATING EXPENSES			0	0	0	0	0	0	0	
35											
36	OPERATING INCOME/LOSS			0	0	0	0	0	0	0	
37											
38	OTHER INCOME		($)	0	($)	0	($)	0	($)	0	
39	OTHER EXPENSE		($)	0	($)	0	($)	0	($)	0	
40											
41	PROFIT BEFORE TAXES			0	0	0	0	0	0	0	
42	TAXES		($)	0	($)	0	($)	0	($)	0	
43											
44	NET INCOME/LOSS (AFT.TAXES)			0	0	0	0	0	0	0	
45											

COLUMNS F(D),H(F),J(H) **Replicate column D(B)** from row 10 to row 45 to columns F(D), H(F), and J(H).

To replicate

from one cell to a range

Type >**D**(B)**10** and type /**R.D**(B)**45** (R) **F**(D)**10** (R)
Prompt line reads N=NO CHANGE R=RELATIVE
Type 15 **R**s

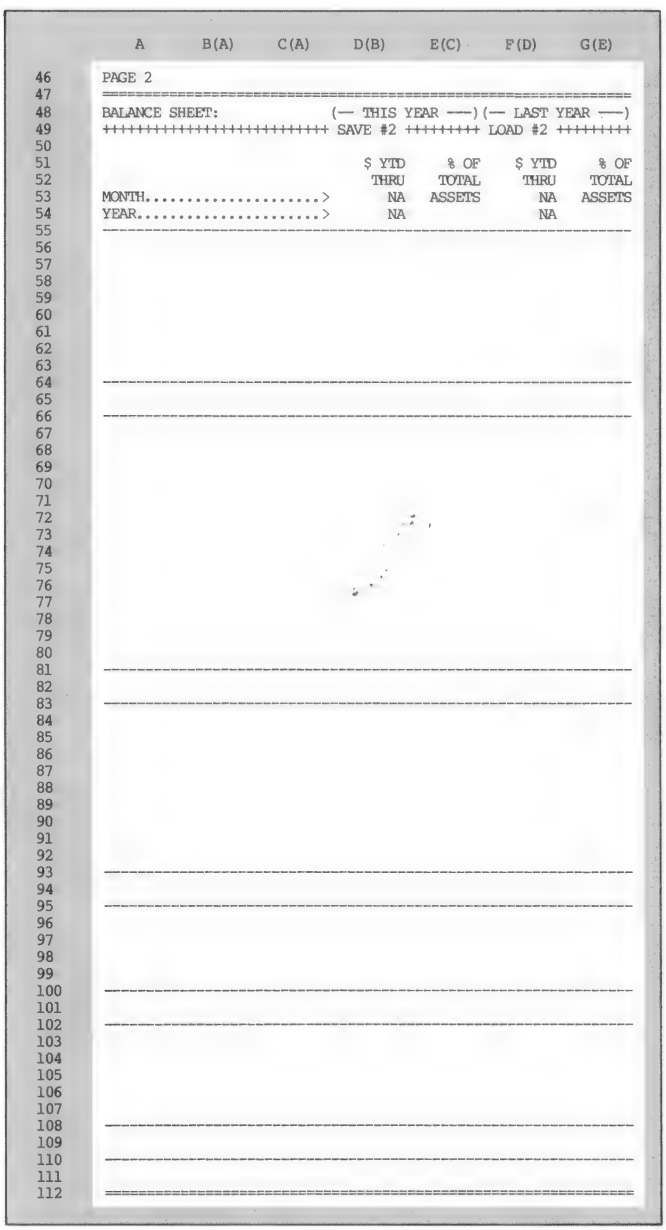
>**D**(B)**10** and type /**R.D**(B)**45** (R) **H**(F)**10** (R)
Prompt line reads N=NO CHANGE R=RELATIVE
Type 15 **R**s

>**D**(B)**10** and type /**R.D**(B)**45** (R) **J**(H)**10** (R)
Prompt line reads N=NO CHANGE R=RELATIVE
Type 15 **R**s

Result Column D(B), containing data entry spaces and formulas, should be reproduced exactly in columns F(D), H(F), and J(H).

Step One

Enter headings, dates, and ruled lines for the balance sheet. The headings give the name of the statement and your company. The dates will be carried down from rows 8 and 9 of the income statement above. They show the current month and year to date covered, and the same month and year to date period for the previous year. You'll also enter labels to identify the contents of each column, and ruled lines to make the final template and printed-out reports easier to read. The DIF line (row 49) is designed to guide you if you want to use the DIF command to move data from this template to another.



ROW 46 **Title of the balance sheet section** of the template can identify the statement about to be entered any way you like, but we suggest that you keep it limited to one row so that the row numbers in this section remain the same.

To enter

labels to identify the template page
phantom instructions to identify the lower right corner of the balance sheet, i.e., G(E)112

Type **>A46** and type **PAGE 2(S)(S)(S)PRINT TO G(E)112(S)(S)>A113** (R)

ROW 47 **Double ruled lines** are entered across the screen. Again, you'll use a method that allows the lines to be moved with the DIF command.

To enter

double ruled lines from column A to column G(E) on rows 47 and 112

Type **>A47** and type "= = = = = = = = = (R) (quotation mark followed by 9 equals signs), or if using the Advanced Version, type "= = = = = = = = =

To enter

labels to identify this statement as the balance sheet, and the figures presented in columns D(B) and E(C) as this year's, and in columns F(D) and G(E) as last year's

Type >**A48** and type **BALANCE S** →
>**B**(A)**48** and type **HEET:** → →
>**D**(B)**48** and type **"(S)(---THIS** →
>**E**(C)**48** and type **"(S)YEAR---)** →
>**F**(D)**48** and type **"(S)(---LAST** →
>**G**(E)**48** and type **"(S)YEAR---)** R

ROW 49 **A DIF guide line** is entered to use when you save or load this file with the DIF command. This part of the file will be identified by the prompts SAVE #2 and LOAD #2.

To enter

a line to help you use the DIF command by showing you where to position the cursor, and phantom instructions to remind you of what to type

Type >**A49** and type **"+ + + + + + + + + +(S)DIF LINE** → → →
>**D**(B)**49** and type **"(S)SAVE #2(S)/S#SDIF2(R) E**(C)**112 (RR)**→ →
>**F**(D)**49** and type **"(S)LOAD #2(S)/S#LDIF2 (RR)** R

To replicate

from one cell to a range

Type >**A49** and type **/R** R **B49.C**(A)**49** R

from one cell to another cell

Type >**A49** and type **/R** R **E**(C)**49** R
>**A49** and type **/R** R **G**(E)**49** R

Result You will now have a line of plus (+) signs on row 49, along with the prompts SAVE #2 and LOAD #2. Position your cursor over either, and look at the cell contents line to see the phantom prompt instructions.

ROW 51 **Headings** for columns on the balance sheet include dates, dollar signs, and percent signs.

To enter

labels to identify the columns

Type >**D**(B)**51** and type **/FR "$ YTD** →
>**E**(C)**51** and type **/FR "% OF** R

To replicate

from one range to another range

Type >**D**(B)**51** and type **/R.E**(C)**51** R **F**(D)**51** R

ROW 52 **Headings** continue for columns on the balance sheet (dates, dollar signs, and percent signs).

To enter

labels to identify the columns

Type >**D**(B)**52** and type **/FR THRU** →
>**E**(C)**52** and type **/FR TOTAL** →
>**D**(B)**52** and type **/R.E**(C)**52** R **.F**(D)**52** R

ROW 53 **Headings** are continued by adding formulas to automatically bring down the number of the month entered in column D(B) at the top of the template to this section.

To enter

labels to identify column contents
formulas in cells D(B)53 and F(D)53 that will automatically carry the number of the month entered in D(B)8 down to these cells

Type >**A53** and type **MONTH.:.** →
>**B**(A)**53** and type **/-.** →
>**C**(A)**53** and type **".....>** →
>**D**(B)**53** and type **@IF(D**(B)**8>0,D**(B)**8,@NA** →
>**E**(C)**53** and type **/FR ASSETS** R

To replicate

from one range to another range

Type >**D**(B)**53** and type **/R.E**(C)**53** R **F**(D)**53** R
Prompt line reads N=NO CHANGE R=RELATIVE
Type **NN**

Result The formulas will now duplicate the number of the month automatically so that you only have to enter it once, at the top of the template on row 8.

ROW 54 **Formulas** are entered to carry the number of the year entered in column D(B) at the top of the template to columns D(B) and F(D).

To enter

a label and arrow to point to the year presented *formulas* in cells D(B)54 and F(D)54 that will automatically carry the number of the year entered in D(B)8 down to these columns, and convert this year to last year in the appropriate columns on command

Type >**A54** and type **YEAR.....** →
>**B**(A)**54** and type /-. →
>**C**(A)**54** and type ".....> →
>**D**(B)**54** and type **@IF(D**(B)**9>0,D**(B)**9,@NA** R
>**F**(D)**54** and type **@IF(F**(D)**9>0,F**(D)**9,@NA** R

Result The formulas will now duplicate the number of the year and adjust it to show last year's date automatically, so that you only have to enter it once.

ROW 55 **Single ruled lines** are entered across the screen to separate major categories on the balance sheet. These lines will be entered with the same replication techniques used previously.

To enter

single ruled lines from column A to column G(E) on rows 55, 64, 66, 81, 83, 93, 95, 100, 102, 108, and 110

Type >**A55** and type "– – – – – – – – – R (quotation mark followed by 9 minus signs), or if using the Advanced Version, type "– R (quotation mark followed by 27 minus signs).

To replicate

from one cell to a range

Type >**A55** and type /**R** R **B55.G**(E)**55** R

from one range to other ranges

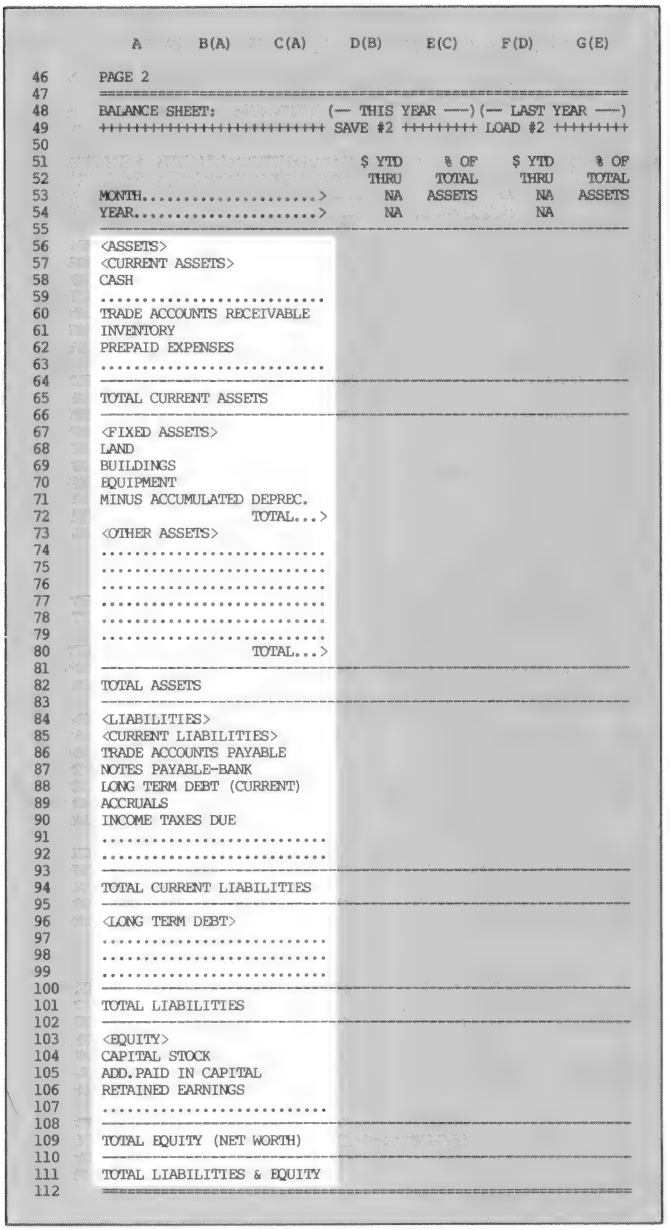
Type >**A55** and type /**R.G**(E)**55** R **A64** R
>**A55** and type /**R.G**(E)**55** R **A66** R
>**A55** and type /**R.G**(E)**55** R **A81** R
>**A55** and type /**R.G**(E)**55** R **A83** R
>**A55** and type /**R.G**(E)**55** R **A93** R
>**A55** and type /**R.G**(E)**55** R **A95** R
>**A55** and type /**R.G**(E)**55** R **A100** R
>**A55** and type /**R.G**(E)**55** R **A102** R
>**A55** and type /**R.G**(E)**55** R **A108** R
>**A55** and type /**R.G**(E)**55** R **A110** R

Result The first step should have put a single ruled line into cell A55; the second step should have replicated it out to column G(E). The last steps should have put the single ruled line into rows 64, 66, 81, 83, 93, 95, 100, 102, 108, and 110.

Step Two

Enter labels for the asset and liability line items in columns A through C of Template.1 (column A if you are using the Advanced Version). These line items vary somewhat from company to company, so you may want to adapt them to fit your needs. A supplemental template (Template.3) has been designed for you to use for a breakdown of line items on the balance sheet. This supplemental template (described on pages 147–149) can be used to break down such line items as fixed assets, trade accounts receivable, and long-term debt. The total line breakdown can then be manually transferred from the supplemental template to the balance sheet. Do *not* use the DIF command to transfer the information, since it would erase formulas in rows where you will be entering and transferring information.

Note: If you add or delete rows at this point, all subsequent row numbers throughout this chapter will be affected. For that reason, first enter the entire template exactly as described, and make any necessary changes or adaptations later.



```
      A      B(A)    C(A)     D(B)     E(C)     F(D)     G(E)
46    PAGE 2
47    ================================================================
48    BALANCE SHEET:                (— THIS YEAR —)(— LAST YEAR —)
49    ++++++++++++++++++++++++++ SAVE #2 ++++++++ LOAD #2 ++++++++
50
51                                  $ YTD     % OF     $ YTD     % OF
52                                  THRU     TOTAL     THRU     TOTAL
53    MONTH.....................>    NA     ASSETS      NA     ASSETS
54    YEAR......................>    NA                 NA
55    ----------------------------------------------------------------
56    <ASSETS>
57    <CURRENT ASSETS>
58    CASH
59    ..........................
60    TRADE ACCOUNTS RECEIVABLE
61    INVENTORY
62    PREPAID EXPENSES
63    ..........................
64    ----------------------------------------------------------------
65    TOTAL CURRENT ASSETS
66    ----------------------------------------------------------------
67    <FIXED ASSETS>
68    LAND
69    BUILDINGS
70    EQUIPMENT
71    MINUS ACCUMULATED DEPREC.
72                         TOTAL...>
73    <OTHER ASSETS>
74    ..........................
75    ..........................
76    ..........................
77    ..........................
78    ..........................
79    ..........................
80                         TOTAL...>
81    ----------------------------------------------------------------
82    TOTAL ASSETS
83    ----------------------------------------------------------------
84    <LIABILITIES>
85    <CURRENT LIABILITIES>
86    TRADE ACCOUNTS PAYABLE
87    NOTES PAYABLE-BANK
88    LONG TERM DEBT (CURRENT)
89    ACCRUALS
90    INCOME TAXES DUE
91    ..........................
92    ..........................
93    ----------------------------------------------------------------
94    TOTAL CURRENT LIABILITIES
95    ----------------------------------------------------------------
96    <LONG TERM DEBT>
97    ..........................
98    ..........................
99    ..........................
100   ----------------------------------------------------------------
101   TOTAL LIABILITIES
102   ----------------------------------------------------------------
103   <EQUITY>
104   CAPITAL STOCK
105   ADD.PAID IN CAPITAL
106   RETAINED EARNINGS
107   ..........................
108   ----------------------------------------------------------------
109   TOTAL EQUITY (NET WORTH)
110   ----------------------------------------------------------------
111   TOTAL LIABILITIES & EQUITY
112   ================================================================
```

ROWS 56–63 **Assets** (specifically current assets) will be entered on these rows. Line items are suggested, but you can revise and/or retitle these lines. However, do not make any changes in the number of rows or in line items now. Keep notes, and add or delete rows later when the entire template is finished.

To enter

a label to identify this and the following sections as assets
labels to identify this section as current assets, and some specific line items under current assets with a few blank lines to use if needed

Type >**A56** and type "<**ASSETS**> (R)

>**A57** and type "<**CURRENT** (→)
>**B**(A)**57** and type **ASSETS**> (R)

>**A58** and type **CASH** (R)

>**A59** and type /-. (R)

>**A60** and type **TRADE ACC** (→)
>**B**(A)**60** and type **OUNTS REC** (→)
>**C**(A)**60** and type **EIVABLE** (R)

>**A61** and type **INVENTORY** (R)

>**A62** and type **PREPAID E** (→)
>**B**(A)**62** and type **XPENSES** (R)

To replicate

from a cell to a range (This step isn't necessary for Advanced VisiCalc users.)

Type >**A59** and type /**R** (R) **B59.C**(A)**59** (R)

from a range to a range

Type >**A59** and type /**R.C**(A)**59** (R) **A63** (R)

ROW 65 **Total current assets** is the sum of rows 55 through 64. When the formula is entered (in "Step Three. Enter data entry spaces and formulas"), it will have a range from one ruled line to another. This range allows you to insert or delete rows anywhere between the lines without affecting the formulas.

To enter

a label to identify total current assets

Type >**A65** and type **TOTAL CUR** (→)
>**B**(A)**65** and type **RENT ASSE** (→)
>**C**(A)**65** and type **TS** (R)

ROWS 67–72 **Fixed assets** is one of the major subdivisions of a firm's assets. In these rows, you'll enter specific line items and a row for total fixed assets.

To enter

a label to identify this section as fixed assets
labels to identify specific line items under fixed assets, and the total fixed assets row

Type >**A67** and type "<**FIXED AS** →
>**B**(A)**67** and type **SETS** >R

>**A68** and type **LAND** R

>**A69** and type **BUILDINGS** R

>**A70** and type **EQUIPMENT** R

>**A71** and type **MINUS ACC** →
>**B**(A)**71** and type **UMULATED** →
>**C**(A)**71** and type **DEPREC.** R

>**C**(A)**72** and type **TOTAL...**> R

ROWS 73–80 **Other assets** vary widely from company to company. Therefore, six blank lines are entered on the template for you to fill in, now or later, with your company's other assets, such as goodwill. Remember not to add or delete rows until the template is completed.

To enter

labels to identify this section as other assets
a label entry space ..... on row 74 between columns A and C on the regular version (column A with the Advanced Version)

(This single space will be replicated on rows 75 through 79. These lines can be used to organize line items before entering their labels on the template.)

Type >**A73** and type "<**OTHER AS** →
>**B**(A)**73** and type **SETS**> R

>**A74** and type /-. R

>**C**(A)**80** and type **TOTAL...**> R

To replicate

from a cell to a range (This step isn't necessary for Advanced Version users.)

Type >**A74** and type /**R** R **B74.C**(A)**74** R

from a range to a number of ranges

Type >**A74** and type /**R.C**(A)**74** R **A75.A79** R

Result You should have dotted label entry spaces on rows 74 through 79.

ROW 82 **Total assets** is the sum of total current assets (row 65), total fixed assets (row 72), and total other assets (row 80).

To enter

a label to identify this row as containing total assets

Type >**A82** and type **TOTAL ASS** →
>**B**(A)**82** and type **ETS** R

.....

ROWS 84–92 **Liabilities,** and specifically current liabilities, will be entered on these rows. Line items are suggested, but you can revise and/or retitle these as needed. Remember to keep notes and make any changes requiring rows to be added or deleted only when the entire template is finished.

To enter

a label to identify this and the sections immediately following as liabilities
labels to identify this section as current liabilities, and some suggested line items, with a few blank lines to use as needed

Type >**A84** and type "<**LIABILIT** →
>**B**(A)**84** and type **IES**> R

>**A85** and type "<**CURRENT** →
>**B**(A)**85** and type **LIABILITI** →
>**C**(A)**85** and type **ES**> R

>**A86** and type **TRADE ACC** →
>**B**(A)**86** and type **OUNTS PAY** →
>**C**(A)**86** and type **ABLE** R

>**A87** and type **NOTES PAY** →
>**B**(A)**87** and type **ABLE-BANK** R

>**A88** and type **LONG TERM** →
>**B**(A)**88** and type "**(S)DEBT (CU** →
>**C**(A)**88** and type **RRENT)** R

>**A89** and type **ACCRUALS** R

>**A90** and type **INCOME TA** →
>**B**(A)**90** and type **XES DUE** R

>**A91** and type /-. R

To replicate

from a cell to a range (This step isn't necessary for Advanced Version users.)

Type **>A91** and type **/R** (R) **B91.C**(A)**91** (R)

from a range to a range

Type **>A91** and type **/R.C**(A)**91** (R) **A92** (R)

ROW **94** **Total current liabilities** is the sum of rows 83 through 93. When the formula is entered on this row in column D(B) (in "Step Three") it will have a range from one ruled line to another. This range will allow you to insert or delete rows anywhere between the lines without affecting the formulas.

To enter

a label to identify total current liabilities

Type **>A94** and type **TOTAL CUR** (→)
>B(A)**94** and type **RENT LIAB** (→)
>C(A)**94** and type **ILITIES** (R)

ROWS **96–99** **Long-term debt** varies widely from company to company. Therefore, three blank lines are entered on the template for you to fill in with items that are appropriate for your company.

To enter

a label to identify this section as long-term debt
a label entry space (.....) on row 97 between columns A and C (column A with the Advanced Version). This single space will then be replicated onto rows 98 and 99.

Type **>A96** and type **"<LONG TER** (→)
>B(A)**96** and type **M DEBT>** (R)

>A97 and type **/-.** (R)

To replicate

from a cell to a range (This step isn't necessary for Advanced Version users.)

Type **>A97** and type **/R** (R) **B97.C**(A)**97** (R)
>A97 and type **/R.C**(A)**97** (R) **A98.A99** (R)

Result You should have dotted label entry spaces on rows 97 through 99.

ROW **101** **Total liabilities** is the sum of total current liabilities (on row 94) plus long-term debt (on rows 97 through 100).

To enter

a label to identify this row as containing total liabilities

Type **>A101** and type **TOTAL LIA** (→)
>B(A)**101** and type **BILITIES** (R)

ROWS **103–107** **Equity** (including capital stock outstanding, additional paid-in capital, and retained earnings) is entered next. Line items are suggested, but you can revise them as needed. Remember to keep notes so you can make any changes requiring rows to be added or deleted when the entire template is finished.

To enter

labels to identify this section as equity and some suggested line item labels, with a blank line to use, if needed, for an additional line item

Type **>A103** and type **"<EQUITY>** (R)

>A104 and type **CAPITAL S** (→)
>B(A)**104** and type **TOCK** (R)

>A105 and type **ADD.PAID** (→)
>B(A)**105** and type **IN CAPITA** (→)
>C(A)**105** and type **L** (R)

>A106 and type **RETAINED** (→)
>B(A)**106** and type **EARNINGS** (R)

>A107 and type **/-.** (R)

To replicate

from a cell to a range (This step isn't necessary for Advanced Version users.)

Type **>A107** and type **/R** (R) **B107.C**(A)**107** (R)

ROW **109** **Total equity** the sum of individual equity components, including capital stock, retained earnings, and additional paid-in capital.

To enter

a label to identify this row as containing total equity

Type >**A109** and type **TOTAL EQU** (→)
>**B**(A)**109** and type **ITY (NET** (→)
>**C**(A)**109** and type **WORTH)** (R)

ROW 111 **Total liabilities and equity** is the sum of total liabilities (on row 101) and total equity (on row 109). The total on this row and on the total assets row (row 82) should always be identical.

To enter

a label to identify total liabilities and equity

Type >**A111** and type **TOTAL LIA** (→)
>**B**(A)**111** and type **BILITIES** (→)
>**C**(A)**111** and type **"& EQUITY** (R)

Step Three

Enter data entry spaces and formulas for entering data and calculating totals in column D(B). The data entry spaces tell you where to place data when you fill in the template. The formulas you'll enter in this section will be used to calculate asset, liability, and equity figures in column D(B).

COLUMN D(B) **Data entry spaces** for the current month's figures are entered in the current month's dollar column. The data entry spaces are 9 characters wide.

To enter

a data entry space where data can be entered either through the computer or by hand on a printed-out blank template

Type >**D**(B)**58** and type **/FR "($(S)(S)(S)(S)(S)(S))** (R)

To replicate

the data entry space

Type >**D**(B)**58** and type **/R** (R) **D**(B)**59.D**(B)**63** (R)
>**D**(B)**58** and type **/R** (R) **D**(B)**68.D**(B)**71** (R)
>**D**(B)**58** and type **/R** (R) **D**(B)**74.D**(B)**79** (R)
>**D**(B)**58** and type **/R** (R) **D**(B)**86.D**(B)**92** (R)
>**D**(B)**58** and type **/R** (R) **D**(B)**97.D**(B)**99** (R)
>**D**(B)**58** and type **/R** (R) **D**(B)**104.D**(B)**107** (R)

COLUMN D(B) **Formulas** are entered that will add line items in categories such as current assets and current liabilities.

```
     A        B(A)    C(A)     D(B)      E(C)      F(D)      G(E)
46   PAGE 2
47   ==========================================================================
48   BALANCE SHEET:                  (— THIS YEAR —)(— LAST YEAR —)
49   ++++++++++++++++++++++++++ SAVE #2 ++++++++ LOAD #2 ++++++++
50
51                                    $ YTD     % OF     $ YTD     % OF
52                                     THRU    TOTAL      THRU    TOTAL
53   MONTH.....................>        NA   ASSETS        NA   ASSETS
54   YEAR......................>        NA                 NA
55   --------------------------------------------------------------------------
56   <ASSETS>
57   <CURRENT ASSETS>
58   CASH                          ($      )
59   .............................. ($      )
60   TRADE ACCOUNTS RECEIVABLE     ($      )
61   INVENTORY                     ($      )
62   PREPAID EXPENSES              ($      )
63   .............................. ($      )
64   --------------------------------------------------------------------------
65   TOTAL CURRENT ASSETS                 0
66   --------------------------------------------------------------------------
67   <FIXED ASSETS>
68   LAND                          ($      )
69   BUILDINGS                     ($      )
70   EQUIPMENT                     ($      )
71   MINUS ACCUMULATED DEPREC.     ($      )
72                      TOTAL...>         0
73   <OTHER ASSETS>
74   .............................. ($      )
75   .............................. ($      )
76   .............................. ($      )
77   .............................. ($      )
78   .............................. ($      )
79   .............................. ($      )
80                      TOTAL...>         0
81   --------------------------------------------------------------------------
82   TOTAL ASSETS                         0
83   --------------------------------------------------------------------------
84   <LIABILITIES>
85   <CURRENT LIABILITIES>
86   TRADE ACCOUNTS PAYABLE        ($      )
87   NOTES PAYABLE-BANK            ($      )
88   LONG TERM DEBT (CURRENT)      ($      )
89   ACCRUALS                      ($      )
90   INCOME TAXES DUE              ($      )
91   .............................. ($      )
92   .............................. ($      )
93   --------------------------------------------------------------------------
94   TOTAL CURRENT LIABILITIES            0
95   --------------------------------------------------------------------------
96   <LONG TERM DEBT>
97   .............................. ($      )
98   .............................. ($      )
99   .............................. ($      )
100  --------------------------------------------------------------------------
101  TOTAL LIABILITIES                    0
102  --------------------------------------------------------------------------
103  <EQUITY>
104  CAPITAL STOCK                 ($      )
105  ADD.PAID IN CAPITAL           ($      )
106  RETAINED EARNINGS             ($      )
107  .............................. ($      )
108  --------------------------------------------------------------------------
109  TOTAL EQUITY (NET WORTH)             0
110  --------------------------------------------------------------------------
111  TOTAL LIABILITIES & EQUITY           0
112  ==========================================================================
```

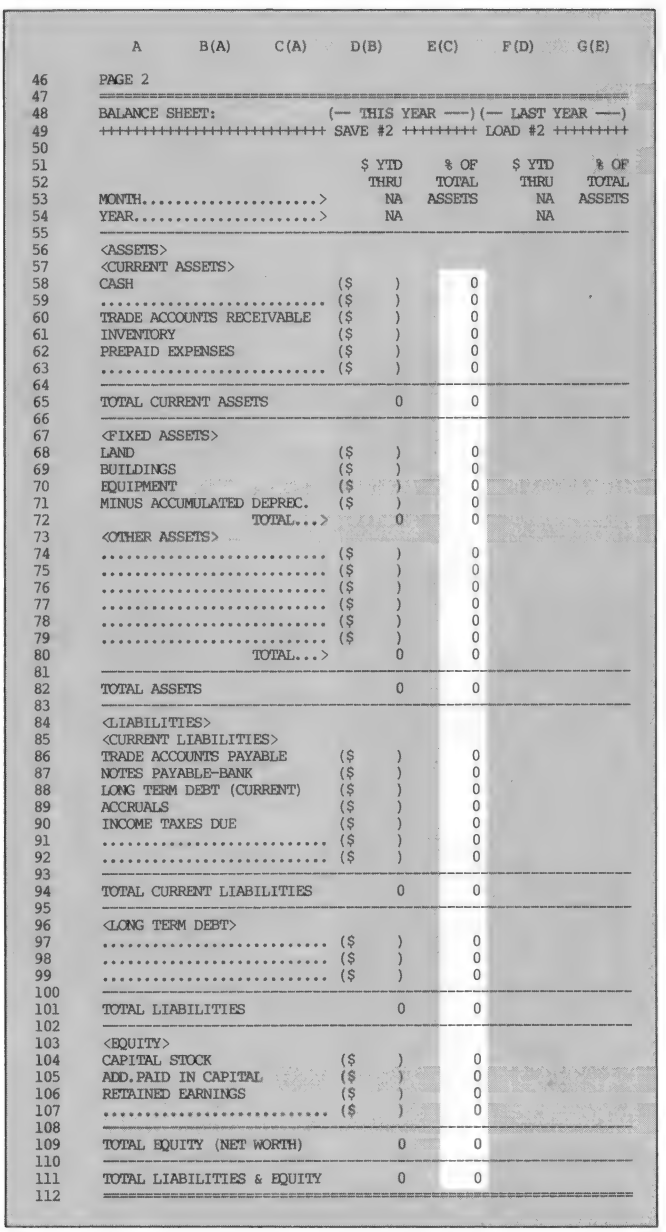
To enter

formulas to complete all data entry spaces in column D(B)

Type >**D**(B)**65** and type **@SUM(D**(B)**64.D**(B)**55)** (R)
>**D**(B)**72** and type **@SUM(D**(B)**71.D**(B)**68)** (R)
>**D**(B)**80** and type **@SUM(D**(B)**79.D**(B)**74)** (R)
>**D**(B)**82** and type **+D**(B)**80+D**(B)**72+D**(B)**65** (R)
>**D**(B)**94** and type **@SUM(D**(B)**93.D**(B)**83)** (R)
>**D**(B)**101** and type **@SUM(D**(B)**100.D**(B)**94)** (R)
>**D**(B)**109** and type **@SUM(D**(B)**108.D**(B)**102)** (R)
>**D**(B)**111** and type **+D**(B)**109+D**(B)**101** (R)

Step Four

Enter and replicate the formula used to calculate operating ratios, which show all asset and liability line items as percentages of total assets.



```
     A        B(A)    C(A)     D(B)      E(C)      F(D)      G(E)
46   PAGE 2
47   ==========================================================
48   BALANCE SHEET:                 (— THIS YEAR —)(— LAST YEAR —)
49   ++++++++++++++++++++++++++ SAVE #2 +++++++++ LOAD #2 ++++++++
50
51                                    $ YTD      % OF      $ YTD      % OF
52                                    THRU       TOTAL     THRU       TOTAL
53   MONTH.....................>        NA       ASSETS       NA       ASSETS
54   YEAR......................>        NA                    NA
55   ----------------------------------------------------------
56   <ASSETS>
57   <CURRENT ASSETS>
58   CASH                        ($     )       0
59   ........................... ($     )       0
60   TRADE ACCOUNTS RECEIVABLE   ($     )       0
61   INVENTORY                   ($     )       0
62   PREPAID EXPENSES            ($     )       0
63   ........................... ($     )       0
64   ----------------------------------------------------------
65   TOTAL CURRENT ASSETS                  0       0
66   ----------------------------------------------------------
67   <FIXED ASSETS>
68   LAND                        ($     )       0
69   BUILDINGS                   ($     )       0
70   EQUIPMENT                   ($     )       0
71   MINUS ACCUMULATED DEPREC.   ($     )       0
72                      TOTAL...>          0       0
73   <OTHER ASSETS>
74   ........................... ($     )       0
75   ........................... ($     )       0
76   ........................... ($     )       0
77   ........................... ($     )       0
78   ........................... ($     )       0
79   ........................... ($     )       0
80                      TOTAL...>          0       0
81   ----------------------------------------------------------
82   TOTAL ASSETS                          0       0
83   ----------------------------------------------------------
84   <LIABILITIES>
85   <CURRENT LIABILITIES>
86   TRADE ACCOUNTS PAYABLE      ($     )       0
87   NOTES PAYABLE-BANK          ($     )       0
88   LONG TERM DEBT (CURRENT)    ($     )       0
89   ACCRUALS                    ($     )       0
90   INCOME TAXES DUE            ($     )       0
91   ........................... ($     )       0
92   ........................... ($     )       0
93   ----------------------------------------------------------
94   TOTAL CURRENT LIABILITIES             0       0
95   ----------------------------------------------------------
96   <LONG TERM DEBT>
97   ........................... ($     )       0
98   ........................... ($     )       0
99   ........................... ($     )       0
100  ----------------------------------------------------------
101  TOTAL LIABILITIES                     0       0
102  ----------------------------------------------------------
103  <EQUITY>
104  CAPITAL STOCK               ($     )       0
105  ADD.PAID IN CAPITAL         ($     )       0
106  RETAINED EARNINGS           ($     )       0
107  ........................... ($     )       0
108  ----------------------------------------------------------
109  TOTAL EQUITY (NET WORTH)              0       0
110  ----------------------------------------------------------
111  TOTAL LIABILITIES & EQUITY            0       0
112  ==========================================================
```

COLUMN E(C) **Formulas** will calculate operating ratios, which show each of the current month's line items as a percentage of total assets.

To enter

a formula that will divide cash (on row 58) by total assets (on row 82) to show cash as a percentage of total assets, and then multiply the percentage by 100 so it reads as a whole number

(Again, embed the formula in an @IF statement so you won't get an error message on the screen or printout — see TIP on page 124. If you are using the Advanced Version, you can display percentages with a percent sign. The command used to format the cell this way also multiplies the decimal percentage by 100 to display it as a whole number. If you want to use this format, enter the typing instructions under [AV] — don't enter the first set given for the regular version. You will only have to enter this format once since it will be replicated along with other cell contents.)

Type **>E(C)58** and type **@IF(D(B)58<>0,100* (D(B)58/D(B)82),0** [R]

[AV] To enter

Type **>C58** and type **/AV%** [R] [R]
@IF(B58<>0,B58/B82,0 [R]

To replicate

the formula into all other rows on column E(C) that contain line items

Type **>E(C)58** and type **/R** [R] **E(C)59.E(C)63** [R]
The prompt line will read N=NO CHANGE
R=RELATIVE
Type **RRN**

>E(C)58 and type **/R** [R] **E(C)65** [R]
The prompt line will read N=NO CHANGE
R=RELATIVE
Type **RRN**

>E(C)58 and type **/R** [R] **E(C)68.E(C)72** [R]
The prompt line will read N=NO CHANGE
R=RELATIVE
Type **RRN**

>E(C)58 and type **/R** [R] **E(C)74.E(C)80** [R]
The prompt line will read N=NO CHANGE
R=RELATIVE
Type **RRN**

>**E**(C)**58** and type **/R** (R) **E**(C)**82** (R)
The prompt line will read N=NO CHANGE
R=RELATIVE
Type **RRN**

>**E**(C)**58** and type **/R** (R) **E**(C)**86.E**(C)**92** (R)
The prompt line will read N=NO CHANGE
R=RELATIVE
Type **RRN**

>**E**(C)**58** and type **/R** (R) **E**(C)**94** (R)
The prompt line will read N=NO CHANGE
R=RELATIVE
Type **RRN**

>**E**(C)**58** and type **/R** (R) **E**(C)**97.E**(C)**99** (R)
The prompt line will read N=NO CHANGE
R=RELATIVE
Type **RRN**

>**E**(C)**58** and type **/R** (R) **E**(C)**101** (R)
The prompt line will read N=NO CHANGE
R=RELATIVE
Type **RRN**

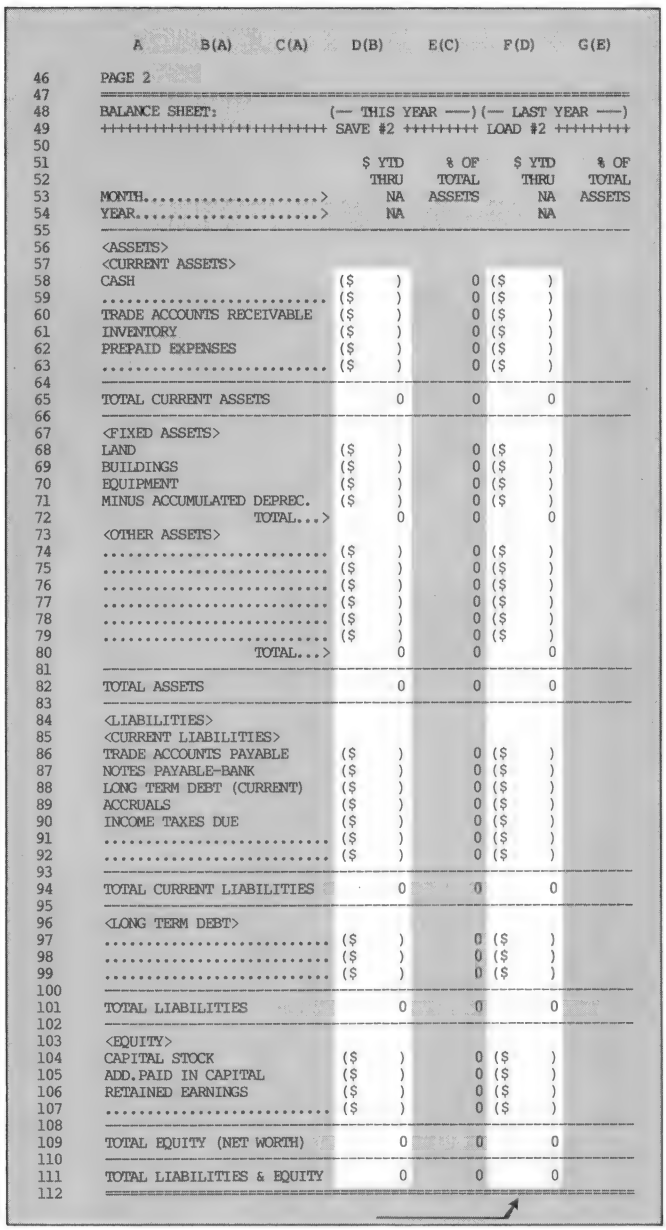
>**E**(C)**58** and type **/R** (R) **E**(C)**104.E**(C)**107** (R)
The prompt line will read N=NO CHANGE
R=RELATIVE
Type **RRN**

>**E**(C)**58** and type **/R** (R) **E**(C)**109** (R)
The prompt line will read N=NO CHANGE
R=RELATIVE
Type **RRN**

>**E**(C)**58** and type **/R** (R) **E**(C)**111** (R)
The prompt line will read N=NO CHANGE
R=RELATIVE
Type **RRN**

Step Five

Replicate the dollar column entered in column D(B) to column F(D).



	A	B(A)	C(A)	D(B)	E(C)	F(D)	G(E)
46	PAGE 2						
47							
48	BALANCE SHEET:			(— THIS YEAR —)		(— LAST YEAR —)	
49	++++++++++++++++++++++++++			SAVE #2 +++++++++		LOAD #2 +++++++++	
50							
51				$ YTD	% OF	$ YTD	% OF
52				THRU	TOTAL	THRU	TOTAL
53	MONTH.....>			NA	ASSETS	NA	ASSETS
54	YEAR.....>			NA		NA	
55							
56	<ASSETS>						
57	<CURRENT ASSETS>						
58	CASH			($)	0	($)	
59	.....			($)	0	($)	
60	TRADE ACCOUNTS RECEIVABLE			($)	0	($)	
61	INVENTORY			($)	0	($)	
62	PREPAID EXPENSES			($)	0	($)	
63	.....			($)	0	($)	
64							
65	TOTAL CURRENT ASSETS			0	0	0	
66							
67	<FIXED ASSETS>						
68	LAND			($)	0	($)	
69	BUILDINGS			($)	0	($)	
70	EQUIPMENT			($)	0	($)	
71	MINUS ACCUMULATED DEPREC.			($)	0	($)	
72	TOTAL...>			0	0	0	
73	<OTHER ASSETS>						
74	.....			($)	0	($)	
75	.....			($)	0	($)	
76	.....			($)	0	($)	
77	.....			($)	0	($)	
78	.....			($)	0	($)	
79	.....			($)	0	($)	
80	TOTAL...>			0	0	0	
81							
82	TOTAL ASSETS			0	0	0	
83							
84	<LIABILITIES>						
85	<CURRENT LIABILITIES>						
86	TRADE ACCOUNTS PAYABLE			($)	0	($)	
87	NOTES PAYABLE-BANK			($)	0	($)	
88	LONG TERM DEBT (CURRENT)			($)	0	($)	
89	ACCRUALS			($)	0	($)	
90	INCOME TAXES DUE			($)	0	($)	
91	.....			($)	0	($)	
92	.....			($)	0	($)	
93							
94	TOTAL CURRENT LIABILITIES			0	0	0	
95							
96	<LONG TERM DEBT>						
97	.....			($)	0	($)	
98	.....			($)	0	($)	
99	.....			($)	0	($)	
100							
101	TOTAL LIABILITIES			0	0	0	
102							
103	<EQUITY>						
104	CAPITAL STOCK			($)	0	($)	
105	ADD.PAID IN CAPITAL			($)	0	($)	
106	RETAINED EARNINGS			($)	0	($)	
107	.....			($)	0	($)	
108							
109	TOTAL EQUITY (NET WORTH)			0	0	0	
110							
111	TOTAL LIABILITIES & EQUITY			0	0	0	
112							

COLUMN F(D) **Replication** places the entries in column D(B) between row 55 and row 112 into column F(D).

To replicate

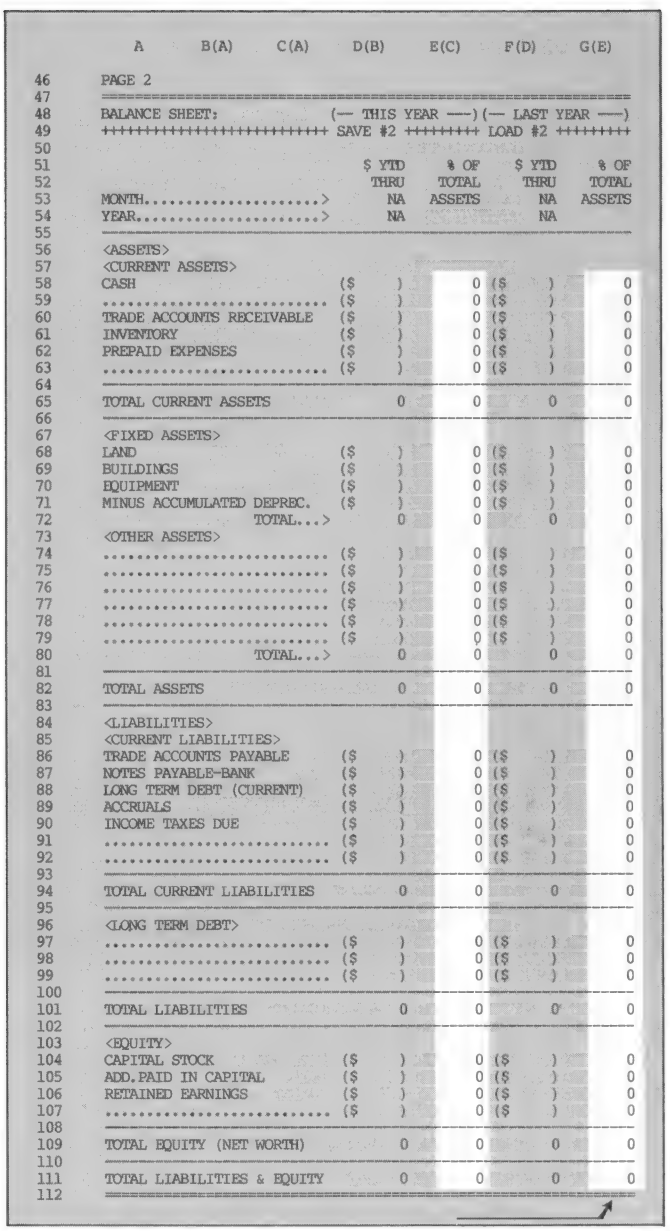
Type >**D**(B)**55** and type **/R.D**(B)**112** (R) **F**(D)**55** (R)

The prompt line will read N=NO CHANGE
R=RELATIVE
Type 17 **R**s

Result Column D(B), containing data entry spaces and formulas, should be reproduced exactly in column F(D).

Step Six

Replicate the percent column entered at column E(C) to column G(E).



	A	B(A)	C(A)	D(B)	E(C)	F(D)	G(E)
46	PAGE 2						
47	==========						
48	BALANCE SHEET:			(— THIS YEAR —)		(— LAST YEAR —)	
49	++++++++++++++++++++++++++			SAVE #2 ++++++++		LOAD #2 ++++++++	
50							
51					$ YTD	% OF	$ YTD	% OF
52					THRU	TOTAL	THRU	TOTAL
53	MONTH.....>				NA	ASSETS	NA	ASSETS
54	YEAR.....>				NA		NA	
55	==========							
56	<ASSETS>							
57	<CURRENT ASSETS>							
58	CASH			($)	0	($)	0
59	.....			($)	0	($)	0
60	TRADE ACCOUNTS RECEIVABLE			($)	0	($)	0
61	INVENTORY			($)	0	($)	0
62	PREPAID EXPENSES			($)	0	($)	0
63	.....			($)	0	($)	0
64	----------							
65	TOTAL CURRENT ASSETS			0	0	0	0
66	==========							
67	<FIXED ASSETS>							
68	LAND			($)	0	($)	0
69	BUILDINGS			($)	0	($)	0
70	EQUIPMENT			($)	0	($)	0
71	MINUS ACCUMULATED DEPREC.			($)	0	($)	0
72			TOTAL...>	0	0	0	0
73	<OTHER ASSETS>							
74	.....			($)	0	($)	0
75	.....			($)	0	($)	0
76	.....			($)	0	($)	0
77	.....			($)	0	($)	0
78	.....			($)	0	($)	0
79	.....			($)	0	($)	0
80			TOTAL...>	0	0	0	0
81	----------							
82	TOTAL ASSETS			0	0	0	0
83	==========							
84	<LIABILITIES>							
85	<CURRENT LIABILITIES>							
86	TRADE ACCOUNTS PAYABLE			($)	0	($)	0
87	NOTES PAYABLE-BANK			($)	0	($)	0
88	LONG TERM DEBT (CURRENT)			($)	0	($)	0
89	ACCRUALS			($)	0	($)	0
90	INCOME TAXES DUE			($)	0	($)	0
91	.....			($)	0	($)	0
92	.....			($)	0	($)	0
93	----------							
94	TOTAL CURRENT LIABILITIES			0	0	0	0
95	----------							
96	<LONG TERM DEBT>							
97	.....			($)	0	($)	0
98	.....			($)	0	($)	0
99	.....			($)	0	($)	0
100	----------							
101	TOTAL LIABILITIES			0	0	0	0
102	----------							
103	<EQUITY>							
104	CAPITAL STOCK			($)	0	($)	0
105	ADD. PAID IN CAPITAL			($)	0	($)	0
106	RETAINED EARNINGS			($)	0	($)	0
107	.....			($)	0	($)	0
108	----------							
109	TOTAL EQUITY (NET WORTH)			0	0	0	0
110	----------							
111	TOTAL LIABILITIES & EQUITY			0	0	0	0
112	==========						

COLUMN G(E) **Replication** copies the entries in column E(C) between row 55 and row 112 into columns G(E).

To replicate

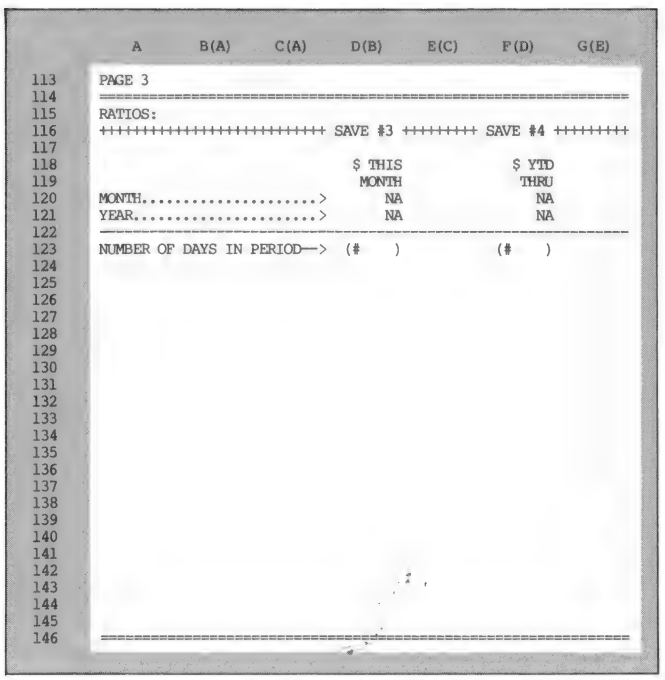
Type >**E**(C)**55** and type /**R.E**(C)**112** (R) **G**(E)**55** (R)
The prompt line will read N=NO CHANGE
R=RELATIVE
Type 114 **R**s

Result Column E(C), containing data entry spaces and formulas, should be reproduced exactly in column G(E).

Step One

Enter headings, dates, and ruled lines for the ratio segment. The headings give the name of the statement. The dates, for the current month and year-to-date covered, will be carried down from rows 8 and 9. Labels will be entered to identify the contents of each column.

The DIF line (row 116) is designed to guide you if you want to use the DIF to move data from this template to another. The ruled lines are added to make the final template and printed-out reports easier to read.



```
        A       B(A)    C(A)    D(B)      E(C)     F(D)      G(E)
113     PAGE 3
114     ==========================================================
115     RATIOS:
116     ++++++++++++++++++++++++ SAVE #3 ++++++++ SAVE #4 ++++++++
117
118                                    $ THIS              $ YTD
119                                     MONTH              THRU
120     MONTH.....................>       NA                NA
121     YEAR......................>       NA                NA
122     ----------------------------------------------------------
123     NUMBER OF DAYS IN PERIOD--> (#    )           (#    )
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146     ==========================================================
```

ROWS 113–121 **Headings** for the ratio section of the template are entered.

To enter

labels to identify this part of the template and the dates covered
formulas in cells D(B)120 and 121 and F(D)120 and 121, which will carry down the dates entered at the top of the template (rows 8 and 9)
phantom instructions that will guide you later when you transfer information between templates or want a printout

Type >**A113** and type **PAGE 3(S)(S)(S)PRINT TO** G(E)**146** (R)

>**A115** and type **RATIOS:** (R)

>**A116** and type "+ + + + + + + + + + **(S) DIF LINE** (→)(→)(→)
>**D**(B)**116** and type **"(S)SAVE #3(S)/S#SDIF3(R)** D(B)**146(RR)** (→) (→)
>**F**(D)**116** and type **"(S)SAVE#4(S)/S#SDIF4(R)** F(D)**146(RR)**(R)
>**D**(B)**118** and type **/FR THIS** (→)
>**F**(D)**118** and type **/FR YTD** (R)

>**D**(B)**119** and type **/FR MONTH** (→)(→)
>**F**(D)**119** and type **/FR THRU** (R)

>**A120** and type **MONTH....** (→)
>**B**(A)**120** and type **/-.** (→)
>**C**(A)**120** and type **".....>** (→)
>**D**(B)**120** and type **@IF(D**(B)**8>0,D**(B)**8,@NA** (R)

>**A121** and type **YEAR.....** (→)
>**B**(A)**121** and type **/-.** (→)
>**C**(A)**121** and type **".....>** (→)
>**D**(B)**121** and type **@IF(D**(B)**9>0,D**(B)**9,@NA** (R)

>**A123** and type **NUMBER OF** (→)
>**B**(A)**123** and type **"(S)DAYS IN** (→)
>**C**(A)**123** and type **PERIOD -->**(→)
>**D**(B)**123** and type **/FR "(#(S)(S)(S)(S)(S))** (→) (→)
>**F**(D)**123** and type **/FR "(#(S)(S)(S)(S)(S))** (R)

To replicate

from a cell to a range

Type >**A116** and type **/R** (R) **B116.C**(A)**116** (R)

from a cell to a cell

Type >**A116** and type **/R** (R) **E**(C)**116** (R)
>**A116** and type **/R** (R) **G**(E)**116** (R)
>**D**(B)**120** and type **/R** (R) **F**(D)**120** (R)
The prompt line will read N=NO CHANGE
R=RELATIVE
Type **NN**

>**D**(B)**121** and type **/R** (R) **F**(D)**121** (R)
The prompt line will read N=NO CHANGE
R=RELATIVE
Type **NN**

Result Headings for this section and a formula to carry down the dates should be entered in the computer. If no dates are entered in rows 8 and 9, the letters NA will appear instead of the dates.

ROW 114 **Double ruled lines** are entered across the screen. Again, the lines will be entered with a method that allows them to be moved by using the DIF command.

To enter

double ruled lines from column A to column G(E) on rows 114 and 146

Type >**A114** and type "= = = = = = = = = (R) (quotation mark followed by 9 equals signs) or, if using the Advanced Version, type "= = = = = = = = =

>**A128** and type **QUICK RAT** ↵
>**B**(A)**128** and type **IO** ↵↵
>**D**(B)**128** and type **/F$ @IF(D**(B)**94**<>**0,(D**(B)**58 + D**(B)**59 + D**(B)**60)/D**(B)**94,@NA** ↵
>**E**(C)**128** and type **"(S)TO 1** R

>**A130** and type **"<ASSET MA** ↵
>**B**(A)**130** and type **NAGEMENT>** R

>**A132** and type **AVG.COLLE** ↵
>**B**(A)**132** and type **CTION PER** ↵
>**C**(A)**132** and type **IOD** ↵
>**D**(B)**132** and type **/F$ @IF(D**(B)**14**<>**0,D**(B)**60/(D**(B)**14/D**(B)**123),@NA** ↵
>**E**(C)**132** and type **"(S)DAYS** R

>**A133** and type **INVENTORY** ↵
>**B**(A)**133** and type **"(S)TURNOVER** ↵ ↵
>**D**(B)**133** and type **/F$ @IF(D**(B)**61**<>**0,D**(B)**24/D**(B)**61,@NA** ↵
>**E**(C)**133** and type **"(S)TIMES** R

>**A135** and type **"<SAFETY/L** ↵
>**B**(A)**135** and type **EVERAGE>** R

>**A137** and type **DEBT TO W** ↵
>**B**(A)**137** and type **ORTH** ↵↵
>**D**(B)**137** and type **/F$ @IF(D**(B)**109**<>**0,D**(B)**101/D**(B)**109,@NA** ↵
>**E**(C)**137** and type **"(S) TO 1** R

>**A138** and type **TIMES INT** ↵
>**B**(A)**138** and type **EREST EAR** ↵
>**C**(A)**138** and type **NED** ↵
>**D**(B)**138** and type **/F$ @IF(D**(B)**30**<>**0,(D**(B)**36 + D**(B)**30) /D**(B)**30,@NA** ↵
>**E**(C)**138** and type **"(S)TIMES** R

>**A139** and type **CF TO CRN** ↵
>**B**(A)**139** and type **"T POR. L** ↵
>**C**(A)**139** and type **TD.** ↵
>**D**(B)**139** and type **/F$ @IF(D**(B)**88**<>**0,(D**(B)**31 + D**(B)**44)/D**(B)**88,@NA** ↵
>**E**(C)**139** and type **"(S)TIMES** R

>**A141** and type **"<PROFITAB** ↵
>**B**(A)**141** and type **ILITY>** R

>**A143** and type **PRF'T MAR** ↵
>**B**(A)**143** and type **GIN ON SA** ↵
>**C**(A)**143** and type **LES** ↵
>**D**(B)**143** and type **/F$ @IF(D**(B)**14**<>**0,D**(B)**41/D**(B)**14,@NA** ↵
>**E**(C)**143** and type **"(S)%** R

>**A144** and type **RETRN.ON** ↵
>**B**(A)**144** and type **TOTAL ASS** ↵
>**C**(A)**144** and type **ETS** ↵
>**D**(B)**144** and type **/F$ @IF(D**(B)**82**<>**0,D**(B)**41/D**(B)**82,@NA** ↵
>**E**(C)**144** and type **"(S)%** R

>**A145** and type **RETURN ON** ↵
>**B**(A)**145** and type **"(S)EQUITY** ↵ ↵
>**D**(B)**145** and type **/F$ @IF(D**(B)**109**<>**0,D**(B)**41/D**(B)**109,@NA** ↵
>**E**(C)**145** and type **"(S)%** R

Step Three

Replicate formulas used to calculate operating ratios from the monthly to the year-to-date column.

```
         A      B(A)     C(A)     D(B)      E(C)     F(D)      G(E)
113    PAGE 3
114    ==========================================================
115    RATIOS:
116    ++++++++++++++++++++++++++ SAVE #3 +++++++++ SAVE #4 +++++++++
117
118                                    $ THIS              $ YTD
119                                     MONTH               THRU
120    MONTH.....................>        NA                  NA
121    YEAR......................>        NA                  NA
122    ----------------------------------------------------------
123    NUMBER OF DAYS IN PERIOD--->  (#    )             (#    )
124
125    <LIQUIDITY>
126
127    CURRENT RATIO                      NA TO 1             NA
128    QUICK RATIO                        NA TO 1             NA
129
130    <ASSET MANAGEMENT>
131
132    AVG.COLLECTION PERIOD              NA DAYS             NA
133    INVENTORY TURNOVER                 NA TIMES            NA
134
135    <SAFETY/LEVERAGE>
136
137    DEBT TO WORTH                      NA TO 1             NA
138    TIMES INTEREST EARNED              NA TIMES            NA
139    CF TO CRN'T POR. LTD.              NA TIMES            NA
140
141    <PROFITABILITY>
142
143    PRF'T MARGIN ON SALES              NA %                NA
144    RETRN.ON TOTAL ASSETS              NA %                NA
145    RETURN ON EQUITY                   NA %                NA
146    ==========================================================
```

COLUMN F(D) **Formulas** to calculate operating ratios for the year to date will be replicated from the THIS MONTH column, D(B), to the YEAR-TO-DATE column, F(D). Monthly and year-to-date ratios will be identical for the first month you use the template. But, as the year progresses, the ratios may vary. The year-to-date ratios should be more representative of the actual state of your firm. Monthly ratios, under some circumstances, can fluctuate widely, but year-to-date ratios, once a number of months in the year have passed, should change more slowly.

To replicate

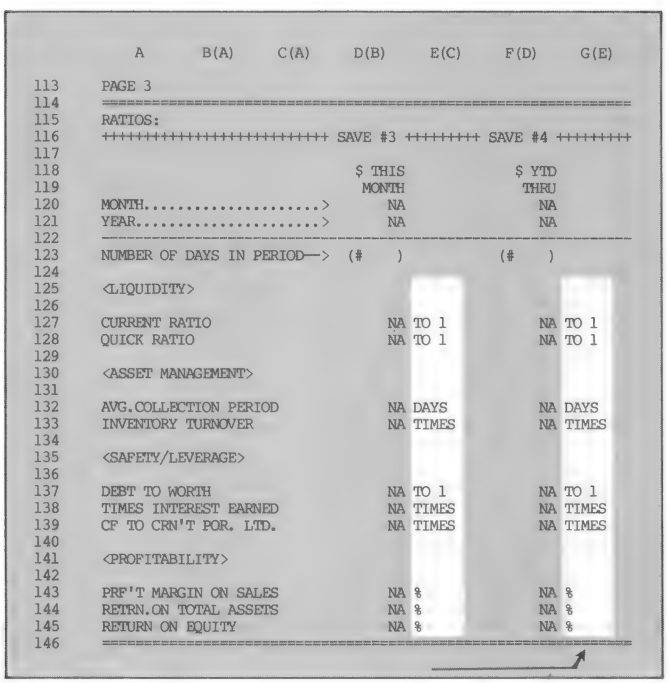
the cell contents of cells 127 through 145 in column D(B) to the same cells in column F(D)

Type >**D**(B)**127** and type /**R.D**(B)**145** (R) **F**(D)**127** (R)
Prompt line will read N=NO CHANGE
R=RELATIVE
Type 34 **Rs**

Result Formulas to calculate year-to-date operating ratios should now be entered in column F(D).

Step Four

Replicate units of measurement (%, times, and number of days) for the calculated ratios from the monthly column to the year-to-date column.



```
        A       B(A)     C(A)     D(B)      E(C)      F(D)      G(E)

113     PAGE 3
114     ================================================================
115     RATIOS:
116     ++++++++++++++++++++++++++ SAVE #3 +++++++++ SAVE #4 +++++++++
117
118                                        $ THIS              $ YTD
119                                        MONTH               THRU
120     MONTH.....................>          NA                  NA
121     YEAR......................>          NA                  NA
122     ----------------------------------------------------------------
123     NUMBER OF DAYS IN PERIOD—>  (#    )           (#    )
124
125     <LIQUIDITY>
126
127     CURRENT RATIO                        NA TO 1             NA TO 1
128     QUICK RATIO                          NA TO 1             NA TO 1
129
130     <ASSET MANAGEMENT>
131
132     AVG.COLLECTION PERIOD                NA DAYS             NA DAYS
133     INVENTORY TURNOVER                   NA TIMES            NA TIMES
134
135     <SAFETY/LEVERAGE>
136
137     DEBT TO WORTH                        NA TO 1             NA TO 1
138     TIMES INTEREST EARNED                NA TIMES            NA TIMES
139     CF TO CRN'T POR. LTD.                NA TIMES            NA TIMES
140
141     <PROFITABILITY>
142
143     PRF'T MARGIN ON SALES                NA %                NA %
144     RETRN.ON TOTAL ASSETS                NA %                NA %
145     RETURN ON EQUITY                     NA %                NA %
146     ================================================================
```

COLUMN **G(E)** **Units of measurement** for the calculated ratios will be replicated from the monthly column, E(C), to the year-to-date column, G(E). When the ratios are calculated, they are expressed in these units, such as number of days, number of times, or percent.

To replicate

the cell contents (and attributes of VisiCalc Advanced Version, if used) of cells 127 through 145 in column E(C) to the same cells in column G(E)

Type >**E**(C)**127** and type /**R.E**(C)**145** (R) **G** (E)**127** (R)

Result Each of the units of measurement from column E(C) should appear in column G(E).

Testing your template

Once your template has been completed, how do you know if there are any mistakes? There are two things you should definitely do:

1 Begin by entering the numbers shown in the illustrations below and on the next page. Be sure to enter numbers only in the indicated spaces. Be sure not to overwrite any of the formulas because that would introduce errors. Check the results you get against the results in the illustrations. The purpose of entering these numbers is to check formulas. The balance sheet won't balance and profit before taxes won't be correct since other income has been entered as a positive rather than a negative number; however, don't be concerned as long as your results match those given. If there are any discrepancies in your results, see "Troubleshooting Template.1" on page 163.

2 The first time you use the template in your own business be sure to enter an income statement and balance sheet that have been calculated using your normal methods. If the results don't match exactly, try to locate the problem. If the differences appear in the ratio section of the template, it is most likely a result of different formulas being used. Check to be sure you are using the same elements in the formulas for both the manual and computer calculations. If there is a difference, decide which you would prefer and correct either your manual methods or the formula used in the template.

	A	B(A)	C(A)	D(B)	E(C)	F(D)	G(E)	H(F)	I(G)	J(H)	K(I)
1	PAGE 1	TEMPLATE.1		FINANCIAL STATEMENTS FOR:	(NAME OF YOUR COMPANY)						
2											
3	INCOME STATEMENT:			(---------- THIS YEAR ----------)				(---------- LAST YEAR ----------)			
4	++++++++++++++++++++++++++	SAVE #1	++++++++++++++++++++++++++					LOAD #1	++++++++++++++++++++++++++		
5											
6				$ THIS	% OF	$ YTD	% OF	$ THIS	% OF	$ YTD	% OF
7				MONTH	NET	THRU	NET	MONTH	NET	THRU	NET
8	ENTER MONTH.....>			1	SALES	1	SALES	1	SALES	1	SALES
9	ENTER YEAR.....>			1984		1984		1983		1983	
10											
11	<SALES>										
12	GROSS SALES			1000	108	5000	108	750	107	3750	107
13	DISCOUNTS,RETURNS & ALLOW.			75	8	375	8	50	7	250	7
14	NET SALES REVENUE			925	100	4625	100	700	100	3500	100
15											
16	<COST OF GOODS SOLD>										
17	.....			75	8	375	8	50	7	250	7
18	.....			75	8	375	8	50	7	250	7
19	.....			75	8	375	8	50	7	250	7
20	.....			75	8	375	8	50	7	250	7
21	.....			75	8	375	8	50	7	250	7
22	.....			75	8	375	8	50	7	250	7
23											
24	TOTAL COST OF GOODS SOLD			450	49	2250	49	300	43	1500	43
25											
26	GROSS PROFIT			475	51	2375	51	400	57	2000	57
27											
28	<OPERATING EXPENSES>										
29	GENERAL,ADMIN. & SELLING			75	8	375	8	50	7	250	7
30	INTEREST EXPENSE			75	8	375	8	50	7	250	7
31	DEPRECIATION			75	8	375	8	50	7	250	7
32	.....			75	8	375	8	50	7	250	7
33											
34	TOTAL OPERATING EXPENSES			300	32	1500	32	200	29	1000	29
35											
36	OPERATING INCOME/LOSS			175	19	875	19	200	29	1000	29
37											
38	OTHER INCOME			75	8	375	8	50	7	250	7
39	OTHER EXPENSE			75	8	375	8	50	7	250	7
40											
41	PROFIT BEFORE TAXES			25	3	125	3	100	14	500	14
42	TAXES			75	8	375	8	50	7	250	7
43											
44	NET INCOME/LOSS (AFT.TAXES)			-50	-5	-250	-5	50	7	250	7
45											

```
46      PAGE 2
47      ================================================================
48      BALANCE SHEET:                (-- THIS YEAR ---)(-- LAST YEAR ---)
49      ++++++++++++++++++++++++++ SAVE #2 +++++++++ LOAD #2 +++++++++
50
51                                    $ YTD    % OF     $ YTD    % OF
52                                     THRU   TOTAL      THRU   TOTAL
53      MONTH.....................>     1   ASSETS         1   ASSETS
54      YEAR......................>  1984              1983
55      ----------------------------------------------------------------
56      <ASSETS>
57      <CURRENT ASSETS>
58      CASH                          100      6       75       6
59      .........................     100      6       75       6
60      TRADE ACCOUNTS RECEIVABLE     100      6       75       6
61      INVENTORY                     100      6       75       6
62      PREPAID EXPENSES              100      6       75       6
63      .........................     100      6       75       6
64      ----------------------------------------------------------------
65      TOTAL CURRENT ASSETS          600     38      450      38
66      ----------------------------------------------------------------
67      <FIXED ASSETS>
68      LAND                          100      6       75       6
69      BUILDINGS                     100      6       75       6
70      EQUIPMENT                     100      6       75       6
71      MINUS ACCUMULATED DEPREC.     100      6       75       6
72                           TOTAL...>  400     25      300      25
73      <OTHER ASSETS>
74      .........................     100      6       75       6
75      .........................     100      6       75       6
76      .........................     100      6       75       6
77      .........................     100      6       75       6
78      .........................     100      6       75       6
79      .........................     100      6       75       6
80                           TOTAL...>  600     38      450      38
81      ----------------------------------------------------------------
82      TOTAL ASSETS                 1600    100     1200     100
83      ----------------------------------------------------------------
84      <LIABILITIES>
85      <CURRENT LIABILITIES>
86      TRADE ACCOUNTS PAYABLE        100      6       75       6
87      NOTES PAYABLE-BANK            100      6       75       6
88      LONG TERM DEBT (CURRENT)      100      6       75       6
89      ACCRUALS                      100      6       75       6
90      INCOME TAXES DUE              100      6       75       6
91      .........................     100      6       75       6
92      .........................     100      6       75       6
93      ----------------------------------------------------------------
94      TOTAL CURRENT LIABILITIES     700     44      525      44
95      ----------------------------------------------------------------
96      <LONG TERM DEBT>
97      .........................     100      6       75       6
98      .........................     100      6       75       6
99      .........................     100      6       75       6
100     ----------------------------------------------------------------
101     TOTAL LIABILITIES            1000     63      750      63
102     ----------------------------------------------------------------
103     <EQUITY>
104     CAPITAL STOCK                 100      6       75       6
105     ADD.PAID IN CAPITAL           100      6       75       6
106     RETAINED EARNINGS             100      6       75       6
107     .........................     100      6       75       6
108     ----------------------------------------------------------------
109     TOTAL EQUITY (NET WORTH)      400     25      300      25
110     ----------------------------------------------------------------
111     TOTAL LIABILITIES & EQUITY   1400     88     1050      88
112     ================================================================
```

```
113     PAGE 3
114     ================================================================
115     RATIOS:
116     ++++++++++++++++++++++++++ SAVE #3 +++++++++ SAVE #4 +++++++++
117
118                                   $ THIS             $ YTD
119                                    MONTH              THRU
120     MONTH.....................>     1                  1
121     YEAR......................>  1984               1984
122     ----------------------------------------------------------------
123     NUMBER OF DAYS IN PERIOD-->     30                 30
124
125     <LIQUIDITY>
126
127     CURRENT RATIO                0.86 TO 1          0.86 TO 1
128     QUICK RATIO                  0.43 TO 1          0.43 TO 1
129
130     <ASSET MANAGEMENT>
131
132     AVG.COLLECTION PERIOD        3.24 DAYS          0.49 DAYS
133     INVENTORY TURNOVER           4.50 TIMES        30.00 TIMES
134
135     <SAFETY/LEVERAGE>
136
137     DEBT TO WORTH                2.50 TO 1          2.50 TO 1
138     TIMES INTEREST EARNED        3.33 TIMES         3.33 TIMES
139     CF TO CRN'T POR. LTD.        0.25 TIMES         1.67 TIMES
140
141     <PROFITABILITY>
142
143     PRF'T MARGIN ON SALES        0.03 %             0.03 %
144     RETRN.ON TOTAL ASSETS        0.02 %             0.10 %
145     RETURN ON EQUITY             0.06 %             0.42 %
146     ================================================================
```

Supplemental schedules for the income statement and balance sheet

To keep an income statement or balance sheet simple, many individual line items are frequently combined. For instance, all of a firm's operating expenses may be combined on one line called "General, administrative, and selling expenses." This condensation is sufficient for many purposes but, as a manager, you probably want and need more detailed information. That detail can be provided by supplemental schedules that break down condensed categories on the income statement or balance sheet into much finer and more useful subdivisions.

How to enter and file supplemental schedules

The supplemental schedules included in this section are designed for flexible and easy use. You only need to enter two templates, one for the income statement and one for the balance sheet. Then you can adapt these two master supplements to show a detailed breakdown of any category on either of the individual statements. Some typical breakdowns of major income statement and balance sheet line items are given for each supplement.

Note: Do *not* transfer the bottom line of these supplemental schedules to the income statement or balance sheet on Template.1 with the DIF command. Using the DIF would erase the formulas used to calculate operating ratios on the rows where you loaded the DIF file. Instead, manually transfer the bottom line dollar totals from the supplemental schedules (Template.2 and Template.3) over to Template.1.

As you build and customize statements, you'll need a workable filing system to store and retrieve the information. The file names you can use depend upon your Apple. With the Apple II, you can use up to 30 characters in a file name. The Apple III allows a maximum of only 15 characters, but it does allow the use of directories and subdirectories. Here is the basic approach to filing, which you can adapt to your computer system:

1 Begin by entering the supplements Template.2 and Template.3 as described later in this chapter. Do not make any adaptations until you have entered the complete templates.

2 Save these blank master supplements under the titles such as Template.2 and Template.3.

3 When you want to adapt a master (supplement), reload the blank template. Then customize the template by filling in the label entry spaces in columns A-C (column A with the Advanced Version). You can also add or delete rows.

4 Save this customized master under a new file name such as Template.2COG (cost of goods).

5 Fill in the data.

6 Save the completed supplement under a title such as COST OF GOODS:JULY 1985.

Whenever you want to develop a new supplemental schedule for a statement, just call up the blank master (Template.2 or Template.3) for that statement. Then add new labels on rows 11 through 36 (columns A-C on the regular VisiCalc program or column A on the Advanced Version), a new page number (in cell A1), and a new heading (in row 3). Each time you want to enter new data, just load the customized master and enter the data.

All master files should be locked (see page 37) so they cannot be inadvertently overwritten or erased.

VISICALC TIPS Adding and deleting rows

Once your template is completed, you can add or delete rows used to enter line labels and data. All formulas will continue working correctly. Be sure never to delete rows containing formulas that calculate totals, such as net sales revenue, total assets, and so forth. When rows are added, new data entry spaces and formulas used to calculate percentages must be replicated from adjoining rows.

To delete line item rows from the completed template: Position your cursor on the row to be deleted. Type **/DR**, and you will delete the row.

To add line item rows to the completed template: Position the cursor in the row below the one in which you want to insert the new row. Type **/IR**. After a moment, a blank row will appear.

This new row contains no data entry spaces or formulas to calculate percentages. To enter these, position your cursor in column A of the nearest row containing these entries and type **/R**. Then type the coordinate of the cell on the end of the row from which you are replicating (in most cases column K(I) for the income statement and column G(E) for the balance sheet will suffice). Next, type (R) followed by the coordinate of the first cell in the row to which you want to replicate; type (R) again. You will now have to specify each formula reference, using **N** for no change, or **R** for relative.

Template.2: Income statement supplement

This supplemental schedule can be used to break down any of the line items on the income statement to show more detail. This detail is often needed by managers to analyze broad categories of expense, but it is generally left out of an income statement to keep the statement easy to read. Some typical areas to detail are:

- **Sales:** Although the total sales line tells you if your sales are increasing or decreasing, it gives no indication of how sales are going by product line, market segment, or any number of other divisions. The supplement could, for instance, break down gross sales into retail, wholesale, direct mail, and international. Or, the supplement can detail sales by product.

- **Cost of goods:** Useful breakdowns in this category depend upon your business. For instance, if you run a retail business, you might want to track cost of goods with the formula, cost of goods = beginning inventory + purchase − discounts + freight − ending inventory. If you run a manufacturing firm, you may want to break down cost of goods into labor costs, material costs, and overhead costs.

- **General, administrative, and selling expense:** Selling costs should usually be separated from G & A costs. This may require some thinking (and effort) regarding how to allocate indirect expenses such as copy machines, clerical help, and rent. However, it's worth the effort. G & A costs are often controllable. Therefore, when you track the cost of individual G & A items — such as postage, utilities, or rent — you may be able to reduce these costs. Every penny squeezed out of these expenses drops directly to the bottom line before taxes.

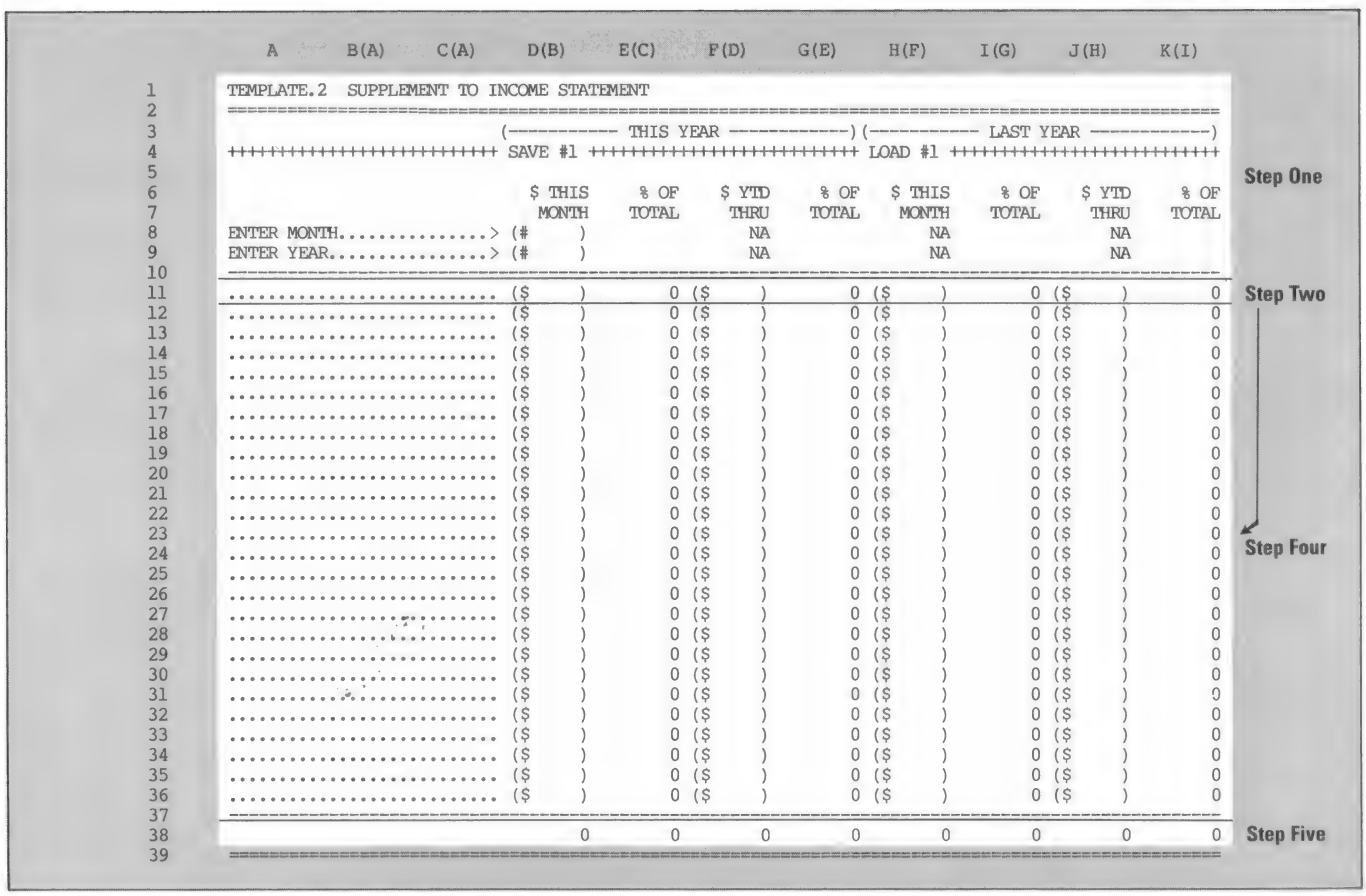
For advice on the income statement breakdowns that will be most useful in your business, we suggest that you consult an accountant. The table below provides a list of items you might want to discuss.

Item	Includes	For example
Gross sales	All revenue earned during period	Invoices for goods shipped; bills for services rendered; cash sales receipts
Discounts, returns, and allowances	Reductions in total sales and invoices	Cash discounts for prompt payment, (e.g., 2% Net 10); items returned by a customer; credits given. Also includes bank fees for credit card sales
Net sales revenue	Gross sales minus deductions	
Cost of goods sold	Cost to company of all items produced and sold or services rendered during a period	Raw materials, direct labor, overhead charges (manufacturing); purchase price of goods plus shipping (merchandising); wages and necessary materials (service)
Gross profit	Net sales minus cost of goods sold	
General, administrative, and selling expense	Expenses which can't be directly linked to the cost of goods sold	Rents and utilities; administrative salaries; research and development costs; employer contributions to social security and unemployment; special services (such as legal); advertising; sales force salaries; insurance; office supplies and equipment
Interest expense	Regular interest payments	Interest on a bank loan
Depreciation expense	Costs that reflect the decline in value and usefulness of large assets over time	Large machines, buildings
Total operating expense	Sum of all costs of running the business which are not part of the cost of goods sold	
Operating income/loss	Gross profit minus cost of goods sold and operating expense	
Other income	Non-sales related income or one-time items	Income on investments; sale of an asset
Other expense	Extraordinary expense items	Results of natural disaster; legal settlements
Profit before tax	Sum of all income minus all expense except taxes	
Taxes	Income taxes	
Net income/loss after taxes	Net of all income and expense (before dividends paid to stockholders, if any)	

The step-by-step instructions in this and subsequent sections won't be given in as much detail as were those for Template.1. The approach used for that template was very easy to follow but took time to enter, especially if you were inexperienced. By now, you are probably expert at entering and replicating, so you should be able to enter this template very quickly.

After the headings are entered, go to row 11 and enter a label entry space, one data entry space in cell D(B)11, and one formula in cell E(C)11. If you are using the Advanced Version, protect and format the cells just entered. Replicate the data entry space and formula alternately across row 11 to column K(I). At this point, if you want to use the deviation portion of the template, columns L(J) through O(M), add the needed formulas. Replicate row 11 between column A and column K(I) down to row 36 (or the final row of your supplement). Add a total column to the bottom row and the supplement is completed. You can then fill in or change labels and values.

Here is how to enter Template.2, step by step, with details of the above procedure.



	A	B(A)	C(A)	D(B)	E(C)	F(D)	G(E)	H(F)	I(G)	J(H)	K(I)	
1	TEMPLATE.2 SUPPLEMENT TO INCOME STATEMENT											
2	==========											
3				(---------- THIS YEAR ----------)				(---------- LAST YEAR ----------)				
4	++++++++++			SAVE #1 ++++++++++				LOAD #1 ++++++++++				
5												Step One
6				$ THIS	% OF	$ YTD	% OF	$ THIS	% OF	$ YTD	% OF	
7				MONTH	TOTAL	THRU	TOTAL	MONTH	TOTAL	THRU	TOTAL	
8	ENTER MONTH.....>			(#)		NA		NA		NA		
9	ENTER YEAR.....>			(#)		NA		NA		NA		
10	==========											
11	.....			($)	0	($)	0	($)	0	($)	0	Step Two
12	.....			($)	0	($)	0	($)	0	($)	0	
13	.....			($)	0	($)	0	($)	0	($)	0	
14	.....			($)	0	($)	0	($)	0	($)	0	
15	.....			($)	0	($)	0	($)	0	($)	0	
16	.....			($)	0	($)	0	($)	0	($)	0	
17	.....			($)	0	($)	0	($)	0	($)	0	
18	.....			($)	0	($)	0	($)	0	($)	0	
19	.....			($)	0	($)	0	($)	0	($)	0	
20	.....			($)	0	($)	0	($)	0	($)	0	
21	.....			($)	0	($)	0	($)	0	($)	0	
22	.....			($)	0	($)	0	($)	0	($)	0	
23	.....			($)	0	($)	0	($)	0	($)	0	
24	.....			($)	0	($)	0	($)	0	($)	0	Step Four
25	.....			($)	0	($)	0	($)	0	($)	0	
26	.....			($)	0	($)	0	($)	0	($)	0	
27	.....			($)	0	($)	0	($)	0	($)	0	
28	.....			($)	0	($)	0	($)	0	($)	0	
29	.....			($)	0	($)	0	($)	0	($)	0	
30	.....			($)	0	($)	0	($)	0	($)	0	
31	.....			($)	0	($)	0	($)	0	($)	0	
32	.....			($)	0	($)	0	($)	0	($)	0	
33	.....			($)	0	($)	0	($)	0	($)	0	
34	.....			($)	0	($)	0	($)	0	($)	0	
35	.....			($)	0	($)	0	($)	0	($)	0	
36	.....			($)	0	($)	0	($)	0	($)	0	
37	==========											
38				0	0	0	0	0	0	0	0	Step Five
39	==========											

STEP ONE. ENTER HEADINGS, DATES, AND RULED LINES

These are the same headings, dates, and ruled lines (through column K(I)) that you used on Template.1, except that the heading at E(C), G(E), I(G), and K(I) is no longer % of net sales, it is the % of whatever the total is. You could use the DIF command to move the entire heading block, minus the formulas that carry and calculate the dates, to this template. You would then have to add the formulas, and change the phantom DIF instructions in cells D(B)4 and H(F)4.

The formula to calculate and carry over the dates for the months in cells F(D)8, H(F)8, and J(H)8 is:

@IF(D(B)**8>0,D**(B)**8,@NA** (R)

The formulas to calculate the sates of the years in cells F(D)9, H(F)9, and J(H)9 are:

>**F**(D)**9** and type **@IF(D**(B)**9>0,D**(B)**9,@NA** (R)
>**H**(F)**9** and type **@IF(D**(B)**9>0,D**(B)**9-1,@NA** (R)
>**J**(H)**9** and type **@IF(D**(B)**9>0,D**(B)**9-1,@NA** (R)

STEP TWO. ENTER ROW 11

To enter

row 11 so it can then be replicated down the template

Type >**A11** and type /-. (R) and then replicate into cells B(A)11 and C(A)11
>**D**(B)**11** and type **"(S)($(S)(S)(S)(S))** (→) and then replicate F(D)11, H(F)11, and J(H)11
>**E**(C)**11** and type **@IF(D**(B)**38)<>0,100*(D**(B)**11/D**(B)**38),0** (→) and then replicate this into G(E)11 with all **RRR**, then into I(G)11 **RRR**, then K(I) 11 **RRR**.

STEP THREE. ENTER ADVANCED VERSION FEATURES

[AV] **To enter**

a format that displays numbers with $ signs and commas, and displays negative values with a negative sign and parentheses
percent signs so all percentages are displayed as whole numbers followed by percent signs

Type >**B11** and type /**AV$,-(** (R) (R)
>**C11** and type /**AV%** (R) (R) (Note: If you use this feature, you will be multiplying the formulas in cells C11, G11, then H11 and I11 by 100 twice. Use the edit command /**E** to move the formula to the edit line, and take out the number 100 which multiplied the formula (B11/B38).

STEP FOUR. REPLICATE ROW 11 TO ROWS 12 THROUGH 36

To replicate

from row 11 to rows 12 through 36

Type >**A11** and type /**R.K**(M)**11** (R) **A12.A36** (R)
The prompt line will read N=NO CHANGE R=RELATIVE
Type **RRR RRR RRR RRR**

STEP FIVE. ADD A ROW FOR TOTALS

To enter

a formula to add all the entries in each column

Type >**D**(B)**38** and type **@SUM(D**(B)**10.D**(B)**37)** (R)

To replicate

total formula across row 38

Type >**D**(B)**38** and type /**R** (R) **E**(C)**38.K**(M)**38** (R)
The prompt line will read N=NO CHANGE R=RELATIVE
Type **RR**

STEP SIX. SAVE YOUR WORK

Save your work under a file name such as Template.2 or Temptwo.

Template.3: Balance sheet supplement

This supplemental schedule can be used to break down any of the line items on the balance sheet to show more detail. You can then use this detail when you are analyzing the broad categories of assets or liabilities. Some typical areas to detail on a balance sheet are included in the chart below. Again, we suggest that you consult an accountant to determine the most useful breakdowns for your business.

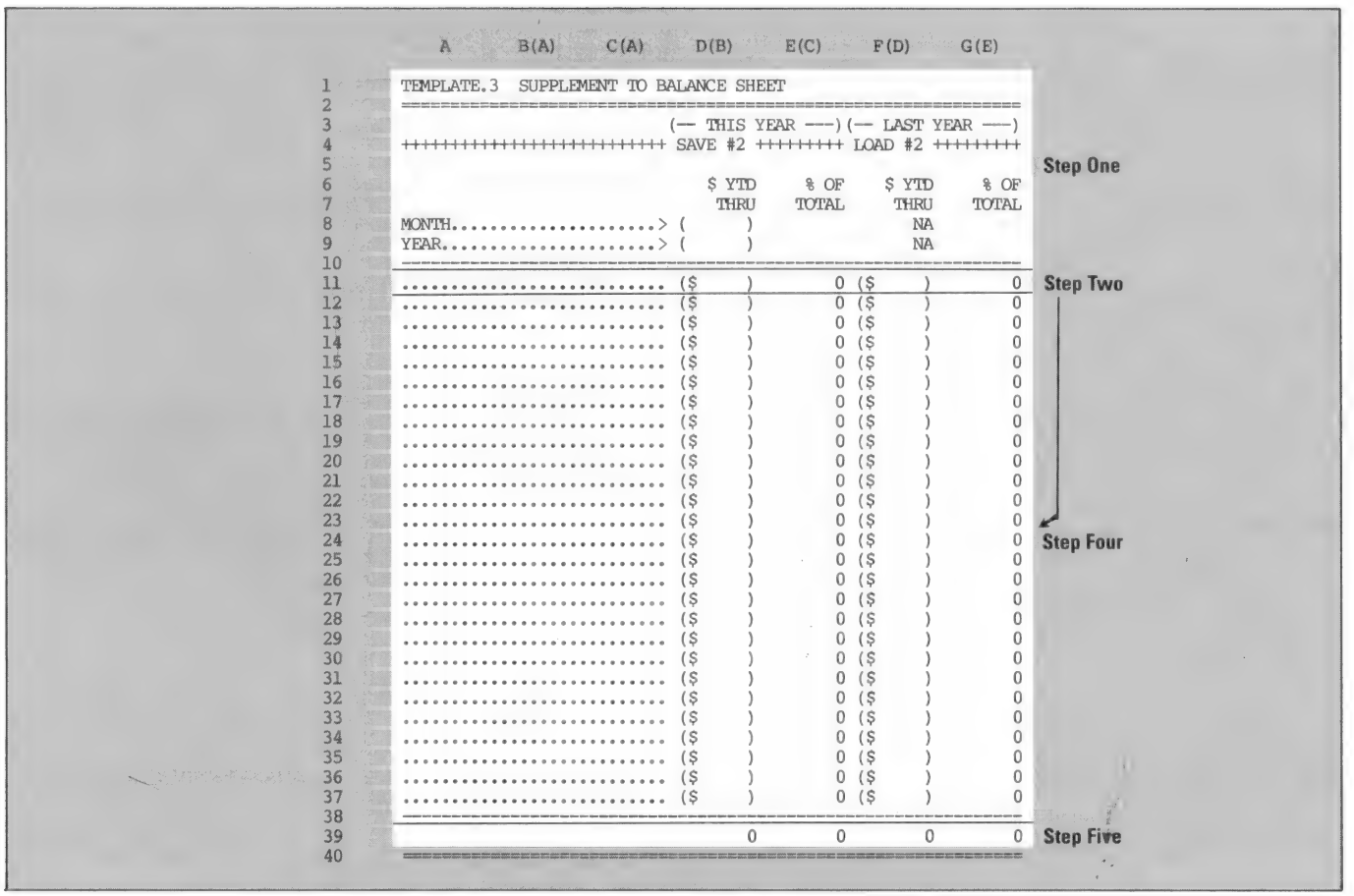
Item	Includes	For example
ASSETS		
Current assets:		
Cash	Actual cash on hand and marketable securities	Bank accounts, money; marketable securities or other earning investments which may be converted quickly
Accounts receivable	Money due to the firm from customers	All unpaid invoices of the company
Inventory	The supplies of the company which are or will become its product	The merchandise in a shop; the finished work, work-in-process, and raw materials in a manufacturing firm
Prepaid expense	Assets which have been paid for but not yet used	The unused portion of prepaid insurance policies
Fixed assets:		
Land	Long-lived large items owned by firm	
Buildings		
Equipment		
Depreciation	The proportion of the cost of fixed assets which has already been deducted from their original cost as an expense over time, reflecting the decline in their usefulness	If a building cost $50,000 and 2 years' depreciation at $5,000 per year has been taken so far, it will be listed at $40,000 on the balance sheet after depreciation
Other assets		Investments in another company for control purposes; patents, copyrights, and other "intangibles"
LIABILITIES		
Current liabilities:		
Accounts payable	Money due by the firm to agencies and suppliers	Unpaid bills from vendors or service companies
Notes payable	Short-term loans	A 6-month loan from the bank
Current long-term debt	The portion of long-term debt which is due to be paid this year	A 3-year loan from the bank which is due now
Accruals	An obligation of the firm, for which there is no invoice	Days' wages earned by employees which are not yet paid
Other current liabilities		Accumulated federal or state taxes due; payments due to social security; other obligations
Long-term debt	All loans to the firm which are not due within the year	A 3-year loan from the bank; a mortgage (only the portion *not* due this year)
Total liabilities	Current liabilities plus long-term debt	
Equity: (or net worth)		
Capital stock	The original investment made by the stockholders or investors, indicated as shares	1000 shares at $10 each = $10,000 capital stock
Paid-in capital	The difference between the stated value of shares and what investors actually paid in (if any); must be listed as positive amount	1000 shares valued at $10 each = $10,000. Investors paid $15 per share on 1000 shares = $15,000. Paid-in capital = $5,000.
Retained earnings	The earnings of the firm which will be held and used for further operations	The last item on the income statement, e.g., profit after taxes (and dividends, if any)

We aren't going to bore you by telling you how to build this template row by row. It's a simple template, requiring a few formulas and a little replication. We provide the model, and you provide the detail by filling in the specific line items you need. This can be done as you proceed or after you've completed the supplement.

After the headings are entered, go to row 11 and enter a label entry space, one data entry space in cell D(B)11, and one formula in cell E(C)11. If you are using the Advanced Version, protect and format the cells just entered. Replicate the data entry space and formula alternately across row 11 to column G(E).

Replicate row 11 between column A and column I(G) down to row 36 (or the final row of your supplement). Add a total column to the bottom row and you're done.

Use the sample supplemental schedule (see illustration below) as a model, and adapt it to fit your needs. Here's how to build the supplement, step by step, with some details of the above procedure.



STEP ONE. ENTER HEADINGS, DATES, AND RULED LINES

Enter a heading, such as SUPPLEMENT TO BALANCE SHEET, and then add dates and ruled lines.

The formulas for cells F(D)8 and F(D)9 are:

>**F**(D)**8** and type **@IF(D**(B)**8>0,D**(B)**8,@NA** [R]
>**F**(D)**9** and type **@IF(D**(B)**9>0,D**(B)**9-1,@NA** [R]

STEP TWO. ENTER ITEM ENTRY SPACE ON ROW 11

To enter
row 11 so it can then be replicated down the template

Type >**A11** and type **/-.** [R] and replicate into B(A)11 and C(A)11
>**D**(B)**11** and type **"(S)($(S)(S)(S)(S)(S)** [→]
>**E**(C)**11** and type **@IF(D**(B)**39<>0,100*(D**(B)**11/D**(B)**39),0** [R] and then replicate that formula into G(E)11 **RRR**

STEP THREE. ENTER ADVANCED VERSION FEATURES

[AV] **To enter**
a format that displays numbers with $ signs and commas, and displays negative values with a negative sign and parentheses
percent signs so all percentages are displayed as whole numbers followed by percent signs

Type >**B11** and type **/AV$,-(** [R] [R]
>**C11** and type **/AV%** [R] [R] (Note: If you use this feature, you will be multiplying the formula in cells B11 and C11 by 100 twice. Use the edit command **/E** to move the formula to the edit line, and take out the number 100 which multiplied the formula B11/B38.)

STEP FOUR. REPLICATE ROW 11 TO ROWS 12 THROUGH 36

To replicate
from row 11 to rows 12 through 36

Type >**A11** and type **/R.G**(E)**11** [R] **A12.A37** [R]
The prompt line will read N=NO CHANGE R=RELATIVE
Type **RRR RRR**

STEP FIVE. ADD A ROW FOR TOTALS

To enter
a formula to add all the entries in each column

Type >**D**(B)**38** and type **@SUM(D**(B)**10.D**(B)**38)** [R]

To replicate
a formula for totals across row 38

Type >**D**(B)**38** and type **/R** [R] **E**(C)**39.G**(E)**39** [R]
The prompt line will read N=NO CHANGE R=RELATIVE
Type **RR**

STEP SIX. SAVE YOUR WORK

Save your work under a file name such as Template.3 or Tempthree.

Printing out your reports

Some of the reports compiled in this book may be too wide for the printer you are using. Template.2, the supplement to the income statement, is quite wide. This or any other report can be printed out in sections, even on an 80-column printer. To make the reports more readable, use the **/M** command to move the column(s) containing the labels, so that each page of the report can be easily read without having to guess at what the line items are.

The illustration opposite page (top) shows Template.2 printed out in one pass through a 132-column printer with controllable character pitch (which lets you print more than 132 columns). The two bottom illustrations show the same template printed out in two parts on an 80-column printer. Notice how moving the labels for each separate pass makes the template printed in sections as easy to read as the one printed in one pass.

VISICALC TIPS Advanced Version layout

There are a few extras you can use to fine-tune your layouts so that printouts are clear and easy to read. Since the best layouts are determined through trial and error, the ability to refine without affecting the data and formulas on a worksheet is important. With its wide range of options, the Advanced Version gives you the ability to do this.

Do your columns print too close together? Do your reports lack that added visual refinement? If so, you can fine-tune with the Advanced Version. You can indent cell displays by any number of characters from the right or left edge of the column. **/AV<** aligns flush left, **/AV>** aligns flush right, **/AV2L** will indent two characters from the column's left edge, **/AV3L** will indent three characters, etc. **/AV2R, /AV3R** will do the same for the column's right edge. **/AVC** centers an entry in a column, useful when column headings are smaller than the column in which they are entered. Other ideas for improving layout and readability of screen displays and printouts can be found in the following TIPS boxes:

Formatting the display and printouts (page 36)
Calculating and displaying percentages (page 35)
Displaying dollar values (page 35)

VISICALC TIPS Printing long templates

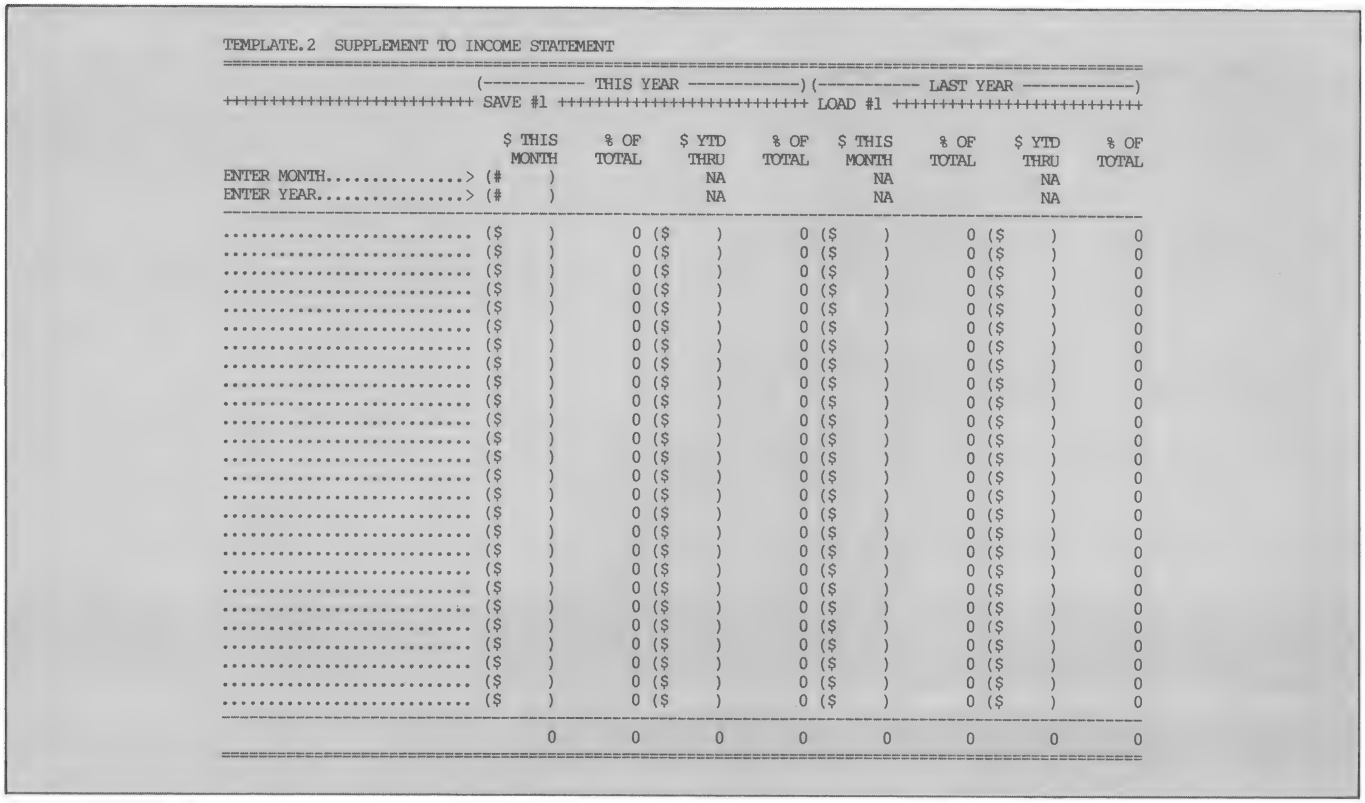
Many templates or worksheets are too long to print out on a standard sheet of paper, so they must be broken into pages. To do this with the VisiCalc program, you have to position the cursor in the upper left corner of the template, then specify the lower right coordinate that will identify a section of data that fits onto the sheet you are printing. When that sheet is printed, you go to cell A on the line below the last row printed to begin printing the next page.

Phantom prompts can be used to guide you. These are hidden instructions which appear when the cursor is in the correct location. When the first phantom prompt is in cell A1, specifying where to print to and where to begin the next page, the job is easier. A typical phantom prompt of this kind would read **PRINT TO K46 >A47.** This identifies both the lower right-hand coordinate, K46 (so you don't have to find it with the cursor or remember it) and the cell to go to (using the GO TO command **>A47**) to begin printing the next page.

The Advanced Version has a simpler technique. You can use the printer-setting option, **/PS**, followed by a pagination command to control printing automatically. The codes following the basic command give you a great deal of flexibility. For example:

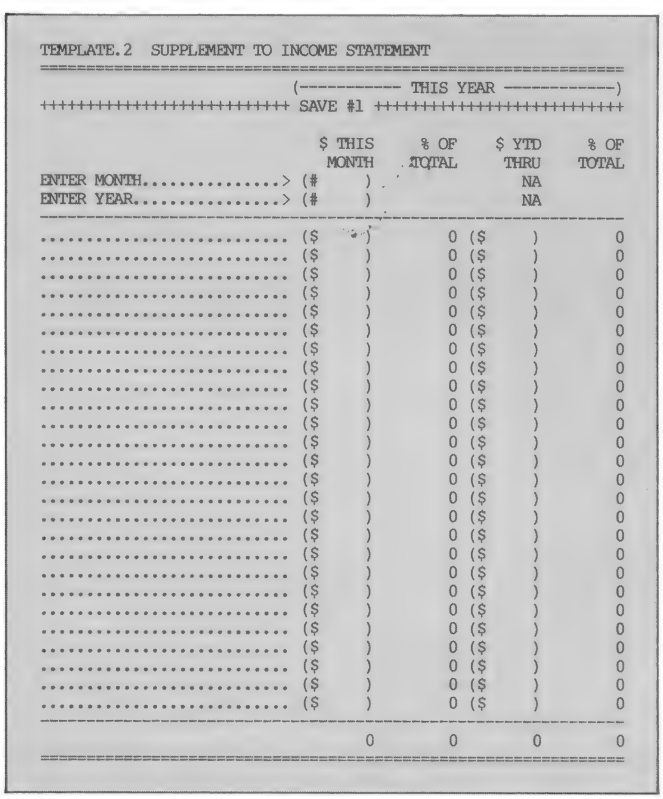
L provides double spaces
B indicates a place for the printer to pause while you change paper
T prints titles for rows and columns even when other parts of the screen are scrolled under them
prints a number on each page of the printout

You can also change character width, the number of lines printed on each page, the length of lines, and margins with other, similar commands. See your VisiCalc Advanced Version user's manual for more details.



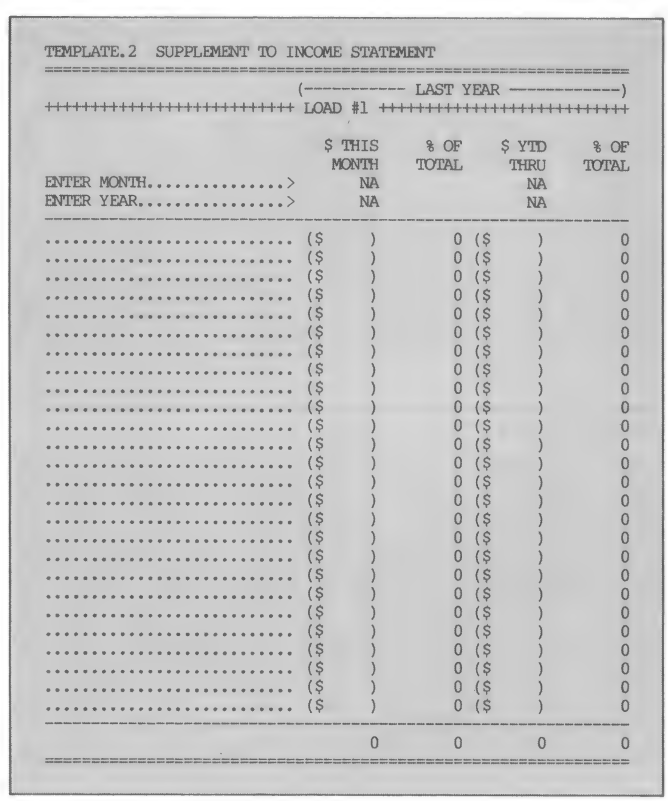
TEMPLATE.2 SUPPLEMENT TO INCOME STATEMENT

	(---------- THIS YEAR ---------- SAVE #1				(---------- LAST YEAR ---------- LOAD #1			
	$ THIS MONTH	% OF TOTAL	$ YTD THRU	% OF TOTAL	$ THIS MONTH	% OF TOTAL	$ YTD THRU	% OF TOTAL
ENTER MONTH.....>	(#)		NA		NA		NA	
ENTER YEAR.....>	(#)		NA		NA		NA	
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
.....	($)	0	($)	0	($)	0	($)	0
		0	0	0	0	0	0	0



TEMPLATE.2 SUPPLEMENT TO INCOME STATEMENT

	(---------- THIS YEAR ---------- SAVE #1			
	$ THIS MONTH	% OF TOTAL	$ YTD THRU	% OF TOTAL
ENTER MONTH.....>	(#)		NA	
ENTER YEAR.....>	(#)		NA	
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
		0	0	0



TEMPLATE.2 SUPPLEMENT TO INCOME STATEMENT

	(---------- LAST YEAR ---------- LOAD #1			
	$ THIS MONTH	% OF TOTAL	$ YTD THRU	% OF TOTAL
ENTER MONTH.....>	NA		NA	
ENTER YEAR.....>	NA		NA	
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
.....	($)	0	($)	0
		0	0	0

APPLE TIPS What's on your diskettes

Once you have completed many files, it's hard to remember which files are stored on which diskettes. You can make a list of a diskette's files appear on the screen or a printout by using the DOS System Master Diskette for the Apple II Plus and Apple IIe, or the Utilities Diskette for the Apple III. A printed list of the contents of each numbered diskette can serve as an index to your diskette files. The printed list gives you important information. For instance, the Apple II Plus might give you the following:

```
]CATALOG D2,

DISK VOLUME 254

 A 006 HELLO
 T 074 TEMPLATE.1
 T 034 TEMPLATE.2
 T 021 TEMPLATE.3
*T 031 EXAMPLE.1
```

The * indicates that the file has been locked using the lock program described on page 37.

The **T** in the second column from the left indicates the files are text files. (Text and other kinds of files are discussed in your DOS manual.)

The numbers in the third column give you the length of the stored file in sectors. A single density disk can store a maximum of 496 sectors. If your files add up to close to this, you may get a DISK FULL error message when you try to save the next file.

Here are the steps to catalog your files:

To catalog the files on a diskette on the Apple II Plus and Apple IIe:

Step 1. Boot your DOS System Master Diskette by inserting it into drive #1. Insert the disk you want to catalog in drive #2 and turn on the computer.

Step 2. When the cursor appears and the drive stops, you must decide whether you want the catalog displayed on the screen or on the printout. If you want it on the screen, go to the next step. If you want it printed out, type **PR#1** (R). (The **1** indicates the slot your printer is in. If it is in a slot other than #1, use that slot number instead.)

Step 3. When the cursor reappears, type **CATALOG, D2** (R).

You should see a listing similar to the one above appear on the screen or printer.

To list the files on a diskette on the Apple III:

Step 1. Load the Utilities Diskette. When the main menu appears on the screen, type **L** to get to the list-files-commands menu.

Step 2. A menu will appear on the screen with a number of questions you must answer. Your answers to these questions will determine the detail of the printed-out list. See your Apple III owner's manual for specific steps to follow.

The Apple III printout or screen display of a diskette's files will include the following information: the size of the file; the date it was last changed; the time it was last changed; the type of file.

VISICALC TIPS Confidentiality

Do you have any numbers on your worksheets that you don't want others to see, either on the screen or in printed-out reports? How about individual's salaries and bonuses, or maybe the line-item breakdown of your expense report? The Advanced Version lets you do this. Just place the cursor in the cell you want to conceal and type /**AHY**. When you want to see the cell contents, type /**AHN**.

7 Controlling financial performance

The business of business is business. Manufacturers produce a product, from computer chips to fashion items and retailers sell them. Service industries provide a service, from fixing pipes to delivering flowers. Products and services differ, but the basic process of doing business doesn't. All businesses sell or provide something to meet a need and to make a profit. And the people who stay in business know their business.

Their knowledge comes from a variety of sources: experience, helpful advice, mistakes, balance sheets, income statements, and ratios are some of the sources. They use this information to learn about the condition and performance of their companies and apply it to controlling that performance.

Gaining and exerting control is not easy because unanticipated changes in the business environment can evade control. Some events are planned; others just happen. Goals are set, met, or missed while mistakes are made, corrected, or repeated. That's all part of doing business. Controlling so much can be both a challenge and a burden to a manager or owner.

Financial information such as ratio analysis forms a control base. You can use ratios (discussed in Chapter 5) to help you monitor performance, set management goals, and communicate with others, such as your banker, about your business. The more knowledge you have, the more effectively you can exercise control.

Two additional tools that you can use with ratios are presented in this chapter: trend analysis and industry comparisons. These tools add meaning to the financial ratios and provide a yardstick with which you can gauge your company's performance and condition.

Trend analysis

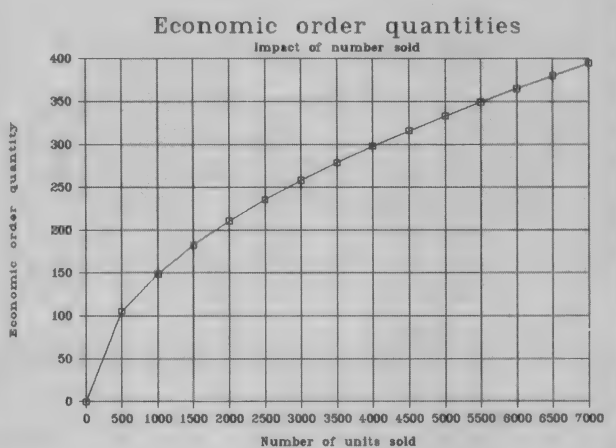
Trend analysis is simply tracking ratios (or other factors) over time. Its purpose is to identify any emerging trends — positive or negative — in the condition or performance of the company. Is the average collection period up, down, or the same? What about inventory turnover? Is the new product selling better than the old? All the ups, downs, and no-changes can be seen and measured with trend analysis.

Ratio trends are usually identified by graphing and comparing the ratios, month by month or year by year. Results are then tabulated in a chart or graph form, as illustrated in the diagram at right. The samples show that the trend is up. But you don't want all ratios to go up. What should you be looking for in the way of trends? The chart on the next page shows the desired trends of the ten ratios covered in this book.

APPLE TIPS Graphics software

You can purchase graphics software that allows your Apple computer to graph parts of your income statement (and other financial statements). The graphs are useful aids for analyzing the information yourself, or for presenting it to others, such as your banker. We do have a few words of advice or caution, however, on selecting graphics software. Be sure to get a package that is compatible with VisiCalc software, and that accepts the entry of data using the DIF command. The DIF feature allows you to save rows or columns of data from a VisiCalc worksheet and transfer them to a graphics package. This saves considerable time because, without the DIF feature, all those figures would have to be entered one at a time.

The sample line chart illustrated here shows how graphics can give figures extra appeal and clarity. Charts and graphs are ideal for plotting how one or more variables act over a period of time.



Ratio	Desired trend
Current	Up
Quick	Up
Average collection period	Down
Inventory turnover	Up
Debt to worth	Down
Times interest earned	Up
Cash flow to current portion of long-term debt	Up
Profit margin	Up
Return on total assets	Up
Return on equity	Up

Remember that ratio trends, like everything else, do have limits. You can't increase or decrease ratios indefinitely. Instead, your purpose is to find the ratio values that, viewed together, reflect the optimal level of performance and condition for your company. And what's optimal? That's a tough question, particularly for an owner or manager of a small new company. But doing an industry comparison can help answer it.

Industry comparison

It can be either reassuring or a rude awakening for a manager to find out how other businesses in the industry are performing. In either case, comparing your firm's ratios with others can establish a useful financial benchmark. But the manager must always keep in mind two major precautions while doing industry comparisons. First, industry averages may not represent what is preferable or even positive. An entire industry may be in poor shape. And second, there can be a sound financial reason for an individual firm to deviate from the industry average. With those precautions stated, let's proceed to "How to do industry ratio comparisons."

First, we'll cover some suitable sources for industry comparison, and then we'll show you how to read a sample page from one of those sources. Next we'll describe how to do an industry comparison for your business. Finally, we'll illustrate, with a sample case company, how trend analysis and industry comparison helped one manager gain a better perspective on his business.

Sources of industry ratio data

Several excellent sources compile and report average industry ratios. Those sources of ratio studies can be classified into three groups. The first group includes agencies that compile data for industries as a by-product of their major function. Among the best known of these are Dun & Bradstreet, Inc. and Robert Morris Associates. The second group comprises many trade associations which, often in conjunction with colleges or universities, compile studies of the various trade groups and industries with which they are associated. The third group includes various agencies and departments of the federal government. In addition, a few companies conduct ratio studies of their customers' industries for the benefit of their clients.

Some reliable sources are presented in this section. Your industry trade association may be an additional source of ratios.

Dun & Bradstreet, Inc.

Communications Dept.
99 Church Street
New York, NY 10007

Since 1932, Dun & Bradstreet has been publishing the monthly, "Dun's Review," now called "Dun's Business Month." This magazine includes information on industry trends.

VISICALC TIPS Quick and easy graphing

Columns of raw numbers are sometimes hard to evaluate because their relationships are hidden in a mass of digits. Percentages such as those used on the common-sized income statements and balance sheets help. They reduce a long series of numbers to their relationships to each other. Graphs are even more revealing because they give a visual image of trends. With the VisiCalc or VisiCalc Advanced Version programs, you can make a quick graph of any dollar or percent column.

The graph will show the size of numbers in relationship to each other, and express this relationship using multiplication signs. For instance, the number 400 could be represented by 4 multiplication signs and the number 100 could be represented by 1 sign.

To make the graph, type /**GF*** (multiplication sign). All the numbers on the worksheet will then be converted to multiplication signs. Since the signs may not fit into the space (width) of the worksheet, you'll probably have to adjust the column width or divide all the numbers by the same number to reduce them equally, and thereby have them fit on the worksheet. Then you can print out your graph.

Publications

Key Business Ratios. Annual. Single copies free on request. Covers 125 lines of business activity including the retail, wholesale, manufacturing, and construction industries. Includes 14 ratios:

*Current assets to current debts (current ratio)
*Net profits on net sales (profit margin)
*Net profits on tangible net worth (return on equity)
Net profits on net working capital
*Net sales to tangible net worth
Net sales to net working capital
*Collection period
*Net sales to inventory
Fixed assets to tangible net worth
Current debt to tangible net worth
*Total debt to tangible net worth
Inventory to net working capital
Current debt to inventory
Funded debts to net working capital

*Ratio presented in this book.

Cost of Doing Business: Corporations. Single copies free on request. Operating ratios extracted from data in the Internal Revenue Service's "Statistics of Income."

Cost of Doing Business: Partnerships & Proprietorships. Single copies free on request. Covers many lines of business, including retail and wholesale trades, manufacturing, construction, and services. States industry operating ratios (line items as percentages of net sales) derived from representative samples of federal income tax returns.

Dynamics of the Credit Decision, by Richard Sanzo. Single copies free on request. A review of the principles underlying credit decisions, credit ratings, and the applications of financial ratios.

Robert Morris Associates

Research Department
Philadelphia National Bank Building
Philadelphia, PA 19107

Long noted among the banking community for their extensive work in the field of ratio compilation and analysis, Robert Morris Associates is a national association of bank loan and credit officers. Founded in 1914, this organization now has a membership of more than 1,200 commercial banks.

Publications

Annual Statement Studies. Published annually. Members free; nonmembers $22.50. Uses financial statements presented to banks to calculate eleven key ratios (in terms of medians and upper and lower quartiles) for approximately 300 lines of business in the manufacturing, contracting, wholesaling, retailing, and service industries. Businesses are broken down by size class.

Sources of Composite Financial Data: A Bibliography, 3rd edition. Members $0.50; nonmembers $1.00. Lists and annotates 90 sources of further information on the "cost of doing business," operating results, and so forth. Covers 374 industries, including manufacturing, wholesaling, retailing, and service firms.

National Cash Register Company

Customer & Support Education
Special Order Dept.
Sugarcamp
Dayton, Ohio 45479

The National Cash Register Company publishes an annual, "Expenses in Retail Business." This booklet examines the cost of operations (operating ratios) in about 40 lines of retail business activity. The ratios are obtained primarily from trade associations. For some lines of business, the expense percentages are broken down into "controllable expense" and "fixed expense." For many lines of business there is a breakdown by size class, as well. $3.00, plus .50 postage and handling.

Lines of business covered

Apparel stores
Appliance and radio-TV dealers
Automobile dealers
Auto parts dealers
Beauty shops
Book stores
Building material dealers
Cocktail lounges
Department stores
Dry cleaners
Feed stores
Florists
Food stores
Furniture stores
Garages
Gift, novelty, and souvenir stores
Hardware stores
Hotels
Jewelry stores

Laundries
Liquor stores
Mass-merchandising stores
Meat markets
Mens' wear stores
Motels and motor inns
Music stores
Novelty stores
Nursery and garden supply stores
Photographic studios and photo supply stores
Professional services
Repair services
Restaurants
Service stations
Shoe stores (family)
Sporting goods stores
Supermarkets
Transportation and service
Variety stores

The Bank of America
"The Small Business Reporter"
Department 3120
P.O.Box 37000
San Francisco, CA 94137

As a service to business owners, managers, and students of small business, as well as those starting a small firm, the Bank of America periodically issues detailed studies of the problems of opening a business. These studies, published in its *Small Business Reporter*, include costs-of-doing-business ratios. Check your library.

Lines of business covered

Apparel stores
Auto parts stores
Bars
Bicycle shops
Book stores
Building maintenance services
Independent camera stores
Proprietary day care centers
Independent drug stores
Coin-operated dry cleaning stores
Business equipment rental
Convenience food stores
The handicraft business
Health food stores
Home furnishing stores
Independent liquor stores
Mail order enterprises
Mobile home and recreation vehicle dealers
Independent pet shops
Plant shops
Small-job printing shops
Repair services
Restaurants and food services
Service stations
Sewing and needlecraft shops
Shoe stores
Independent sporting goods stores
Toy and hobby craft stores

American Bankers Association

1120 Connecticut Avenue, NW
Washington, DC 20036

A Banker's Guide to Small Business Loans, 1978. A reference book for the banker, which will help you understand how loan requests are evaluated. Currently out of stock, but check your library.

U.S. Government

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402
(or local book Government Printing Office bookstores)

Quarterly Financial Report for Manufacturing, Mining, and Trade Corporations. Available on subscription basis, $19.00 per year. Published by the Federal Trade Commission four times a year. Gives financial data on U.S. corporations, based on tax returns.

Statistics of Income for Partnership Returns (1979, $5.50) and *Statistics of Income for Sole Proprietorships* (1979–80, $7.50), published by the Treasury Department, contain income statement and balance sheet data compiled from U.S. income tax returns.

Electronic sources of financial information

With your Apple, you can have instant access to financial data-bases. When you subscribe to one of these electronic sources, you can receive, via your computer, detailed financial information and industry indicators on business categories such as ratios, earnings, and price changes. Two of these electronic sources are:

Dow Jones & Company, Inc.
200 West Monroe Street
Chicago, IL 60606

Source Telecomputing Corporation
1616 Anderson Road
McLean, VA 22102

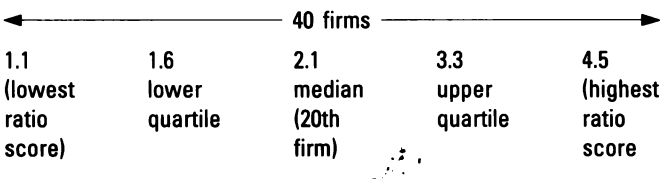
How to read a ratio source

Most sources provide guidelines on how to read, use, and interpret their data. Before you flip to the page containing your industry's profile, read the introductory material on the source. Review carefully the precautions or qualifications on the correct use of their information.

You'll notice that many sources give a range of ratio scores. The range of ratios reported in a study may be represented by quartiles, with three ratio figures given, one each for the upper quartile, median, and lower quartile. These figures represent placement points on the total range of ratio values. They are determined by arranging, or ranking, all the individual firms' ratios from the lowest to the highest score.

The median figure is that of the firm that is ranked halfway between the highest and lowest ratio scores. The upper quartile score is that of the firm that falls halfway between the median and the highest ratio. The lower quartile figure is the ratio that falls halfway between the median and the lowest ratio. Thus a range of ratios is provided but note that the highest or the lowest ratios are not reported.

For example, this is how a ratio range might be represented for 40 firms:



Anatomy of a sample industry survey

A sample page from Robert Morris Associates is illustrated on page 158. The numbered callouts point out some information you should note when you read the page.

Interpretation of Statement Studies figures

RMA recommends that Statement Studies data be regarded only as general guidelines and not as absolute industry norms. There are several reasons why the data may not be fully representative of a given industry:

1 The financial statements used in the Statement Studies are not selected by any random or statistically reliable method. RMA member banks voluntarily submit the raw data they have available each year, with these being the only constraints: (a) The fiscal year-ends of the companies reported may not be from April 1 through June 29, and (b) their total assets must be less than $100 million.

2 Many companies have varied product lines; however, the Statement Studies categorize them by their primary product Standard Industrial Classification (S/C) number only.

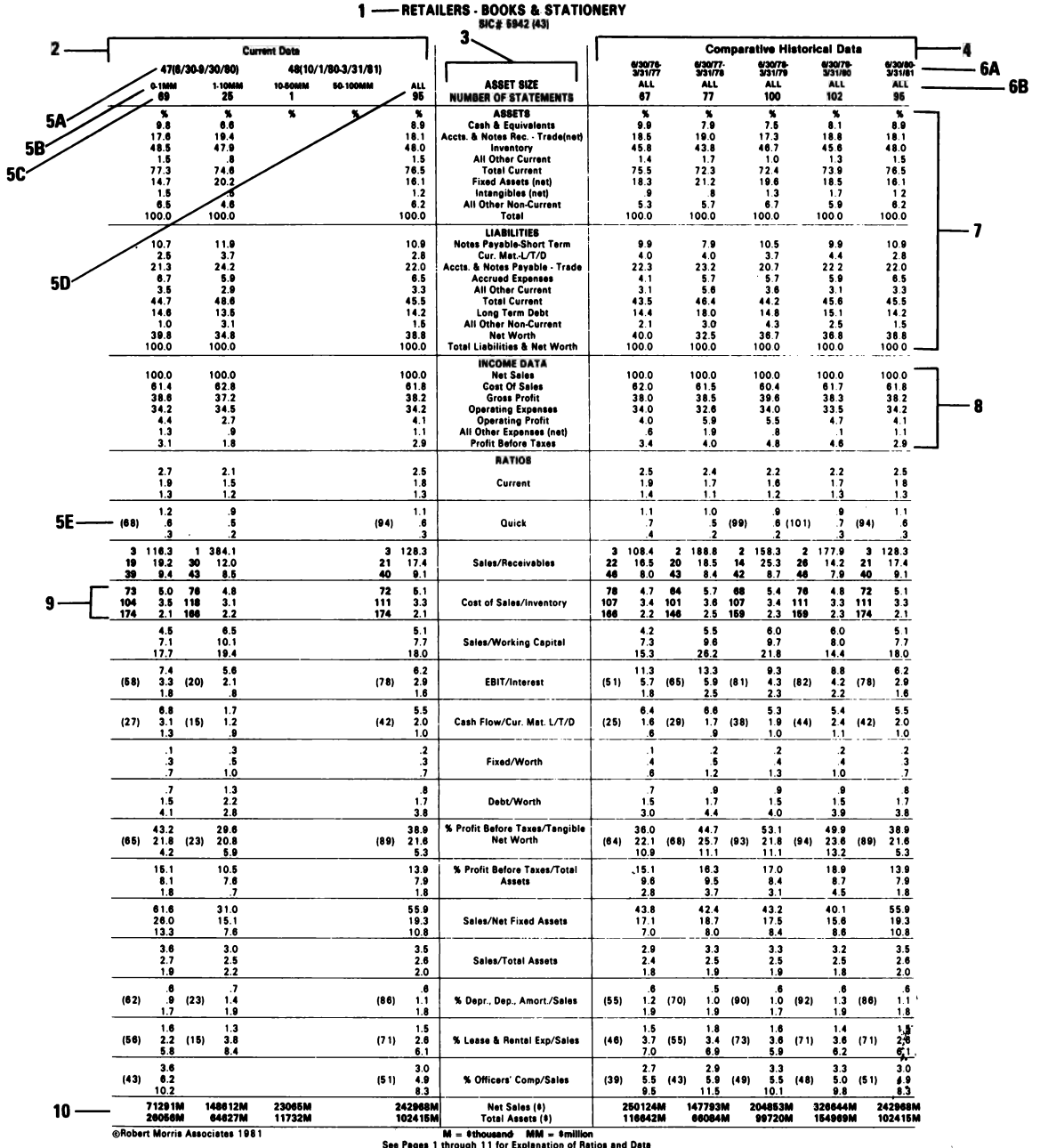
3 Some of our industry samples are rather small in relation to the total number of firms in a given industry. A relatively small sample can increase the chances that some of our composites do not fully represent an industry.

4 There is the chance that an extreme statement can be present in a sample, causing a disproportionate influence on the industry composite. This is particularly true in a relatively small sample.

5 Companies within the same industry may differ in their method of operations which in turn can directly influence their financial statements. Since they are included in our sample, too, these statements can significantly affect our composite calculations.

6 Other considerations that can result in variations among different companies engaged in the same general line of business are different labor markets; geographical location; different accounting methods; quality of products handled; sources and methods of financing; and terms of sale.

For these reasons, RMA does not recommend the Statement Studies figures be considered as absolute norms for a given industry. Rather the figures should be used only as general guidelines and in addition to the other methods of financial analysis. RMA makes no claim as to the representatives of the figures printed in this book.



1 — RETAILERS - BOOKS & STATIONERY
SIC# 5942 (43)

2 — Current Data
47(6/30-9/30/80) 48(10/1/80-3/31/81)
0-1MM 1-10MM 10-50MM 50-100MM ALL
69 25 1 95

3 — ASSET SIZE / NUMBER OF STATEMENTS

4 — Comparative Historical Data

6A — 6/30/78-3/31/77 | 6/30/77-3/31/78 | 6/30/78-3/31/79 | 6/30/79-3/31/80 | 6/30/80-3/31/81
6B — ALL 67 | ALL 77 | ALL 100 | ALL 102 | ALL 95

5A / 5B / 5C / 5D / 5E — Current Data

0-1MM	1-10MM	10-50MM	50-100MM	ALL	ASSET SIZE / NUMBER OF STATEMENTS	6/30/78-3/31/77 ALL 67	6/30/77-3/31/78 ALL 77	6/30/78-3/31/79 ALL 100	6/30/79-3/31/80 ALL 102	6/30/80-3/31/81 ALL 95
%	%	%	%	%	ASSETS	%	%	%	%	%
9.8	6.6			8.9	Cash & Equivalents	9.9	7.9	7.5	8.1	8.9
17.6	19.4			18.1	Accts. & Notes Rec. - Trade(net)	18.5	19.0	17.3	18.8	18.1
48.5	47.9			48.0	Inventory	45.8	43.8	46.7	45.6	48.0
1.5	.8			1.5	All Other Current	1.4	1.7	1.0	1.3	1.5
77.3	74.6			76.5	Total Current	75.5	72.3	72.4	73.9	76.5
14.7	20.2			16.1	Fixed Assets (net)	18.3	21.2	19.6	18.5	16.1
1.5	.6			1.2	Intangibles (net)	.9	.8	1.3	1.7	1.2
6.5	4.6			6.2	All Other Non-Current	5.3	5.7	6.7	5.9	6.2
100.0	100.0			100.0	Total	100.0	100.0	100.0	100.0	100.0
					LIABILITIES					
10.7	11.9			10.9	Notes Payable-Short Term	9.9	7.9	10.5	9.9	10.9
2.5	3.7			2.8	Cur. Mat.-L/T/D	4.0	4.0	3.7	4.4	2.8
21.3	24.2			22.0	Accts. & Notes Payable - Trade	22.3	23.2	20.7	22.2	22.0
6.7	5.9			6.5	Accrued Expenses	4.1	5.7	5.7	5.9	6.5
3.5	2.9			3.3	All Other Current	3.1	5.8	3.6	3.1	3.3
44.7	48.6			45.5	Total Current	43.5	46.4	44.2	45.6	45.5
14.6	13.5			14.2	Long Term Debt	14.4	18.0	14.8	15.1	14.2
1.0	3.1			1.5	All Other Non-Current	2.1	3.0	4.3	2.5	1.5
39.8	34.8			38.8	Net Worth	40.0	32.5	36.7	36.8	38.8
100.0	100.0			100.0	Total Liabilities & Net Worth	100.0	100.0	100.0	100.0	100.0
					INCOME DATA					
100.0	100.0			100.0	Net Sales	100.0	100.0	100.0	100.0	100.0
61.4	62.8			61.8	Cost Of Sales	62.0	61.5	60.4	61.7	61.8
38.6	37.2			38.2	Gross Profit	38.0	38.5	39.6	38.3	38.2
34.2	34.5			34.2	Operating Expenses	34.0	32.6	34.0	33.5	34.2
4.4	2.7			4.1	Operating Profit	4.0	5.9	5.5	4.7	4.1
1.3	.9			1.1	All Other Expenses (net)	.6	1.9	.8	.1	1.1
3.1	1.8			2.9	Profit Before Taxes	3.4	4.0	4.8	4.6	2.9
					RATIOS					
2.7	2.1			2.5	Current	2.5	2.4	2.2	2.2	2.5
1.9	1.5			1.8		1.9	1.7	1.6	1.7	1.8
1.3	1.2			1.3		1.4	1.1	1.2	1.3	1.3
1.2	.9			1.1	Quick	1.1	1.0	.9	.9	1.1
(68) .6	.5		(94)	.6		.7	.5 (99)	.6 (101)	.7 (94)	.6
.3	.2			.3		.4	.2	.2	.3	.3
3 116.3	1 384.1		3	128.3	Sales/Receivables	3 108.4	2 188.8	2 158.3	2 177.9	3 128.3
19 19.2	30 12.0		21	17.4		22 16.5	20 18.5	14 25.3	26 14.2	21 17.4
39 9.4	43 8.5		40	9.1		46 8.0	43 8.4	42 8.7	46 7.9	40 9.1
73 5.0	76 4.8		72	5.1	Cost of Sales/Inventory	76 4.7	84 5.7	68 5.4	76 4.8	72 5.1
104 3.5	118 3.1		111	3.3		107 3.4	101 3.6	107 3.4	111 3.3	111 3.3
174 2.1	166 2.2		174	2.1		166 2.2	146 2.5	159 2.3	159 2.3	174 2.1
4.5	6.5			5.1	Sales/Working Capital	4.2	5.5	6.0	6.0	5.1
7.1	10.1			7.7		7.3	9.6	9.7	8.0	7.7
17.7	19.4			18.0		15.3	26.2	21.8	14.4	18.0
7.4	5.6			6.2	EBIT/Interest	11.3	13.3	9.3	8.8	6.2
(58) 3.3 (20)	2.1		(78)	2.9		(51) 5.7 (65)	5.9 (81)	4.3 (82)	4.2 (78)	2.9
1.8	.8			1.6		1.8	2.5	2.3	2.2	1.6
6.8	1.7			5.5	Cash Flow/Cur. Mat. L/T/D	6.4	6.6	5.3	5.4	5.5
(27) 3.1 (15)	1.2		(42)	2.0		(25) 1.6 (29)	1.7 (38)	1.9 (44)	2.4 (42)	2.0
1.3	.9			1.0		.6	.9	1.0	1.1	1.0
.1	.3			.2	Fixed/Worth	.1	.2	.2	.2	.2
.3	.5			.3		.4	.5	.4	.4	.3
.7	1.0			.7		.6	1.2	1.3	1.0	.7
.7	1.3			.8	Debt/Worth	.7	.9	.9	.9	.8
1.5	2.2			1.7		1.5	1.7	1.5	1.5	1.7
4.1	2.8			3.8		3.0	4.4	4.0	3.9	3.8
43.2	29.6			38.9	% Profit Before Taxes/Tangible Net Worth	36.0	44.7	53.1	49.9	38.9
(65) 21.8 (23)	20.8		(89)	21.6		(64) 22.1 (68)	25.7 (93)	21.8 (94)	23.6 (89)	21.6
4.2	5.9			5.3		10.9	11.1	11.1	13.2	5.3
15.1	10.5			13.9	% Profit Before Taxes/Total Assets	15.1	16.3	17.0	18.9	13.9
8.1	7.6			7.9		9.6	9.5	8.4	8.7	7.9
1.8	.7			1.8		2.8	3.7	3.1	4.5	1.8
61.6	31.0			55.9	Sales/Net Fixed Assets	43.8	42.4	43.2	40.1	55.9
26.0	15.1			19.3		17.1	18.7	17.5	15.6	19.3
13.3	7.6			10.8		7.0	8.0	8.4	8.6	10.8
3.6	3.0			3.5	Sales/Total Assets	2.9	3.3	3.3	3.2	3.5
2.7	2.5			2.6		2.4	2.5	2.5	2.5	2.6
1.9	2.2			2.0		1.8	1.9	1.9	1.8	2.0
.6	.7			.6	% Depr., Dep., Amort./Sales	.6	.5	.6	.6	.6
(62) .9 (23)	1.4		(86)	1.1		(55) 1.2 (70)	1.0 (90)	1.0 (92)	1.3 (86)	1.1
1.7	1.9			1.8		1.9	1.9	1.7	1.9	1.8
1.6	1.3			1.5	% Lease & Rental Exp/Sales	1.5	1.8	1.6	1.4	1.8
(56) 2.2 (15)	3.8		(71)	2.6		(46) 3.7 (55)	3.4 (73)	3.6 (71)	3.6 (71)	2.6
5.8	8.4			6.1		7.0	6.9	5.9	6.2	6.1
3.6				3.0	% Officers' Comp/Sales	2.7	2.9	3.3	3.3	3.0
(43) 6.2			(51)	4.9		(39) 5.5 (43)	5.9 (49)	5.5 (48)	5.0 (51)	4.9
10.2				8.3		9.5	11.5	10.1	9.8	8.3
71291M	148612M	23065M		242968M	Net Sales ($)	250124M	147793M	204853M	326844M	242968M
26056M	64627M	11732M		102415M	Total Assets ($)	116642M	66084M	99720M	154969M	102415M

10

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M = $thousand MM = $million
See Pages 1 through 11 for Explanation of Ratios and Data

1 Name of industry and standard industrial classification code used by the Department of Commerce.

2 Current data column: The left-hand column of the page contains the current year industry data.

3 Label column: Contains line items or ratio headings.

4 Comparative historical data: The right-hand column of the page contains comparative information for the current year and previous four years.

5 Study characteristics for current data: Information on the firms included in the study is shown:

- **A** Number of firms studied with fiscal years ending during the periods indicated
- **B** Size categories of firms measured in total assets; m refers to thousands, mm refers to millions
- **C** Number of firms in each size category
- **D** Total number of firms studied
- **E** Number of firms included in a particular ratio study

6 Firm characteristics for historical data

- **A** Fiscal year ending dates for comparative historical data
- **B** Number of firms studied for historical data

7 Average balance sheet data in common-sized format

8 Average income statement data in common-sized format

9 Range of ratio figures: upper quartile, median, lower quartile

10 Total net sales and assets for all firms in group

Annual Statement Studies, Robert Morris Associates. Reprinted by permission. © 1982 by Robert Morris Associates.

How to do industry ratio comparisons

Use a suitable source for comparison

Although this may sound like stating the obvious, it is a point worth emphasizing. You have many choices of ratio information as described under the "Sources of Industry Ratio Data" section of this chapter. Be selective and consult your accountant if necessary.

Review how the source ratios were compiled

This is an essential step to take before you actually compare your firm's ratios with those of the industry. Check how many firms participated in the study you choose, the size of the firms, and how the source defines or combines line items. Since ratios are calculated using the line items, it's important to know what is included in each item. Accounting policies vary so widely among companies that you can't assume you (or your accounting department) and the ratio source are using the same definitions. Only use sources that clearly define their terms. For example, this is how Robert Morris Associates, in its *Annual Statement Studies*, defines the quick ratio:*

Quick Ratio

Computation: Cash and equivalents plus accounts and notes receivable (trade) divided by total current liabilities.

$$\frac{\text{cash \& equivalents + accounts \& notes receivable (trade)}}{\text{total current liabilities}}$$

Interpretation: Also known as the "ACID TEST" ratio, it is a refinement of the current ratio and is a more conservative measure of liquidity. The ratio expresses the degree to which a company's current liabilities are covered by the most liquid current assets. Generally, any value of less than 1 to 1 implies a reciprocal "dependency" on inventory or other current assets to liquidate short-term debt.

Calculate your firm's ratios so they match the source ratios

Try to calculate your ratios so that they match, as closely as possible, the way the source ratios were compiled. That may mean recalculating some ratios, using the terms or line items of the study. You may, for example, need to combine some of your firm's expense classifications to make your information consistent with that of the source.

Also remember that you may have to adjust or annualize your firm's ratios if the source uses industry averages based on annual financial statements. Throughout this book, we have suggested that you calculate financial ratios monthly. You must adjust these monthly ratios by multiplying any income statement figure by 12. Then, when you calculate the ratio you'll have an annual one that you can compare with industry averages.

**Annual Statement Studies,* Robert Morris Associates. Reprinted by permission. © 1982 by Robert Morris Associates.

Earmark ratios that seem out of line with the trade average

Your firm's ratios may be considerably above or below the industry average. Earmark both, since you can use that information later. You'll probably recognize a serious negative deviation when you see it. But the definition of "serious" does vary from ratio to ratio and from industry to industry.

Analyze the results of your ratio comparison

Now that you know how your firm's ratios compare with those of your industry, try to zero in on the meaning of that comparison. Before you get overly concerned about a deviation between your ratios and those of the industry, look at the ratio trend for your firm and the industry. If, for example, your ratio is below par but the trend is in the right direction, there may be less need for concern.

Next, ask how homogeneous the industry is, and whether there is a valid reason for your firm's ratio deviation. There can be sound financial reasons for an individual firm to have a ratio that deviates from the trade average. For instance, a source may combine all types of clothing stores, from high-quality to discount stores, under the classification of retail clothing. Inventory turnover may be different in all types of stores, but the source reports only the *average* inventory turnover ratio.

Also, look at your ratios in relationship to each other. Aim for a total picture of the ratios before you decide that corrective action on one is necessary. Discussing the results with an accountant or with other managers can be helpful in gaining perspective on the situation.

Use the results to set management goals

The next step is to use your analysis to set meaningful goals for your firm. You may want to maintain, raise, or lower a ratio. Here you can use your personal computer to explore possible future actions — to try out different ratio scenarios using the VisiCalc program (as you did in the "What If" sections of this book). When you have the goals set, you can determine the necessary actions.

Remember, when setting goals, that you may not want your firm to be "just average." Industry averages do not report the performance of the most or least efficient firms in the sample. Instead, all the different levels of performance are averaged. Therefore, your objective may be to adjust your firm's operations so that your ratios are better than average.

Conversely, you may decide to keep a certain ratio below average for a period of time because there is a valid reason for doing so. In the end, you determine the use of industry comparisons. Ratio analysis is only a tool that you must adapt to *your* business.

Case demonstration

As a practical illustration of the use of trend analysis and industry comparison, consider the following sample case.

A year has passed for the company used throughout this book. During that time, the owner/manager has been tracking ratios, many of them on a monthly basis. Now it is the end of the fiscal year and time to prepare the annual ratios. This year's ratios, compared with last year's, indicate areas of financial improvement and weakening. (See ratio chart below.) An analysis of the firm's performance reveals the following:

Current ratio. The company's current ratio weakened from 2.33 to 1.93 because cash down payments were required for large increases of property and machinery. This lower ratio reflects the reduction in cash. The company's weaker liquidity is the result of the property and machinery purchases.

Quick ratio. Again, the lower level of cash and increased inventory weakened the company's liquidity, and the quick ratio dropped from 1.17 to .61, almost 50 percent.

Average collection period. A reduction from 49 days to 31.06 days indicates an improvement in customer payments — perhaps the result of management's increased credit and collection activities. Quicker collection of accounts will tie up less capital as the company continues to grow. But the manager should also check out that the company isn't missing more potential sales by eliminating slightly less credit-worthy customers. That could inhibit company growth.

Selected financial ratios for the company

Ratio	This year	Last year
Current	1.93:1	2.33:1
Quick	.61:1	1.17:1
Average collection period	31.06 days	49 days
Inventory turnover	2.47 times	3 times
Profit margin (operating)	8.17%	13.33%
Return on equity	18.85%	30.77%
Cash flow to current portion of long-term debt	2.66	3.90
Debt to worth	.87	.77

Inventory turnover. The company's increase in inventory caused a slowdown in its turnover ratio. The ratio of the number of times the inventory turned over fell from 3 times last year to 2.47 times this year. Since this is a vital ratio for the company, this decrease needs to be noted and corrected.

Operating profit margin. The reduction in operating profit from 13.33 to 8.17 percent is a matter for serious management analysis. The drop of 39 percent requires immediate management action. The acquisition of the property and machinery led to higher fixed costs, which produced the lower profitability. If the fixed asset purchases are not followed by the necessary sales to support them, it will prove to be a poor decision.

Return on equity. The ratio of net profit to net worth shows exactly what the business earned on the equity capital invested. The ratio has not been adjusted for personal owner expenses. It declined from 30.77 to 18.85, a drop of 39 percent for the same reasons that operating profit margin declined.

Cash flow to current portion of long term debt. This ratio, too, decreased significantly from 3.90 to 2.66.

Debt to worth. The total debt of the business increased with the property and equipment purchases, raising the debt to worth ratio from .77 to .87. This increase is a signal to management to carefully consider further purchases of inventory, property, and machinery.

There are positive and negative trends in the business. To check them out further, the owner/manager could review the figures from the last three or four years. In addition to analyzing the financial ratios presented here, the owner/manager could compare the company's ratios with those of others in the same industry. Since the company is in the book printing trade, the owner looks that up in Robert Morris Associates' *Annual Statement Studies*. With a mixture of anticipation and curiosity, the manager makes up a chart (see opposite page) that compares the firm's ratios to those of the industry average. Then comes the comparison. Before you read our analysis (and the manager's) of the result, do your own. What does the information reveal?

For better or for worse?

Looking at just the company's ratios, all but the average collection period indicate a deterioration in the firm's financial condition and performance. The current and quick ratios show less liquidity; the operating profit margin and return on equity ratios point to severely depressed profitability; and debt to worth and cash flow to current portion of long-term debt reveal a higher debt burden and a weakened ability to meet maturing debt repayments. The asset management ratios, average collection period and inventory turnover, yield mixed signals.

But does this mean that the company is not being properly managed? To answer this question we need not only to look at the trends, but to compare performance and condition to other firms in the industry.

The industry comparison reveals that the firm is actually in better shape than the trends indicate, particularly if we assume that the company is fairly typical of

The manager's chart comparing the firm ratios with industry average ratios

Ratio	This year	Last year	Industry average
Current	1.93:1	2.33:1	1.5:1
Quick	.61:1	1.17:1	1.0:1
Average collection period	31.06 days	49 days	56 days
Inventory turnover	2.47 times	3 times	6.8
Profit margin (operating)	8.17%	13.33%	3%
Return on equity	18.85%	30.77%	25.9%
Cash flow to current portion long-term debt	2.66	3.90	2.2
Debt to worth	.87	.77	1.8

others in the industry. The following individual firm ratios are better than the industry average: current, average collection period, operating profit margin, cash flow to current portion of long-term debt, and debt to worth. In fact the average collection period and operating profit margin for the firm are in the upper quartile.

The quick ratios and inventory turnover ratios are below the industry average and in the lower quartile. Recall from Chapter 5 that a low inventory turnover ratio may represent excessive investment in inventory. The low quick ratio reflects this since inventory is the least liquid current asset and not included in the quick ratio. The return on equity is also below the industry average but well above the lower quartile.

What can we conclude from all of this? Despite the negative trends in many of the ratios, the company as a whole compares quite favorably with other firms in its industry. The poor liquidity (quick ratio) appears to be the result of weak inventory management and the recent acquisition of property and machinery. The expenditures for the property and machinery will be ultimately judged by the ability of the firm to continue growing. The growth will help return profitability and, to some extent, liquidity to its previously excellent levels.

Inventory management, however, must be addressed unless there are compelling and logical reasons for lower inventory turnover. If no such reasons exist, the company is needlessly tying up funds in inventory. These funds can and should be invested elsewhere where they can be more profitably employed.

Last year . . . This year . . . Next year?

Reviewing the results, the manager decides that although the future looks good for the company, it could be brighter. Definite action is required in some areas of financial management, or the business will be in trouble. The manager feels confident about the company's ability to survive the necessary adjustments, and improve in condition and performance. The next step is to forecast and plan for next year. To do that, the manager will use the personal computer, and the second book in the Apple Business User's Guide series, *Planning and Budgeting for Higher Profits.*

Troubleshooting Example.1

If you encounter any problems with your example, either when entering it or when using it to explore the "What Ifs" in Chapters 3, 4, and 5, here are some suggestions on how to identify the problem.

If your example doesn't give results identical to those described in the book, there are several possible causes. Listed in order of their likelihood they include:

1 Values or formulas were not entered correctly when the example was entered.

2 The example was entered correctly but after changing some numbers in a "What If," you neglected to restore them before proceeding with the next step.

3 When entering changes in the example, you inadvertently typed a value into a cell containing a formula, erasing the formula in the process.

4 After making changes in a "What If," you saved the changed file on top of the original example by mistake (you should never save a "What If" file and you should write-protect the disk containing the original example when it's finished so this can't happen. See "Protecting your templates" on page 37.)

Regardless of the cause of the problem, the first step is to identify it.

Step 1. If the problem was first noticed when you explored "What Ifs," clear the screen and reload EXAMPLE.1. See if the problem was cleared up. If so, it was probably caused by "2" or "3" above. If the problem still exists, however, continue.

Step 2. Check the basics. When you follow the troubleshooting steps below, first set recalculation to automatic by typing **/GRA** and always check the example from the top down. If you follow both of these suggestions any error you correct will automatically recalculate all values in the entire example. This will prevent your exploring figures that appear to be incorrect because they were caused by a previously corrected error but which haven't changed because the sheet wasn't recalculated.

Step 3. Check the totals. Begin by checking the totals in column D(B) to see if they are correct; if one of them isn't, you have located the general area of the problem. The key total lines should read as follows:

Cell #	Item	$
D(B)23	Net income	24000
D(B)48	Total assets	230000
D(B)61	Total liabilities	100000

Step 4. Compare the columns. Columns F(D) and G(E) are exact duplicates of the values in each cell in columns D(B) and E(C) as they appeared in the original example. They have been included to make comparisons of changes easy when you explore "What Ifs" but they also help when troubleshooting. If in step 3 above you isolated the problem to a specific statement, begin checking column D(B) of that statement against column F(D) row by row. If none of the totals were found to be incorrect in step 3 above, you will have to check the entire column D(B) from row 7 to row 96.

- If you have to check the entire column, begin the comparison at D(B) and use the → key to scroll down the column comparing each entry in column D(B) with the original example on the same row in column F(D).

- If you find a pair of figures that doesn't match, put the cursor in that space and read the entry contents line to see if the cell contains a formula or value. If it contains a formula, check it against the formula that you entered in Chapters 3 and 4.

- If the cell contains a value, check to see if it should. You may have inadvertently typed a value on top of the formula or erased it by using the # key to see the entire calculated value and then hitting the return key. Check the cell contents in your example against the entries you should have made listed in Chapter 3 or 4.

Note: If you are using an Apple II with a 40-column screen you will have to scroll the screen to the right to see columns D(B) and F(D) at the same time, which partially hides the labels from you. This shouldn't be any problem because the numbers are what need comparing. It doesn't matter what they are as long as the numbers in columns D(B) and F(D) match exactly.

Step 5. If any of the numbers in column D(B) are different from the comparable figures in column F(D), change column D(B) to match column F(D). Be sure not to type over formulas. Change only those figures that are values. You can tell what is in the cell by looking at the cell contents line on the top of the VisiCalc screen display when your cursor is positioned in the cell in question.

Step 6. Check your corrections. Check to be sure all totals match as do all ratios. If the ratios in column D(B) don't match those in column F(D) you still have a problem. Look up the items making up the ratio formula in Chapter 5 and check those items to see if they are correct. If one of them is not, find out what contributes to it: for instance, a total is the sum of a group of rows above it, so perhaps one of those rows is wrong.

Troubleshooting Template.1

Template.1 contains hundreds of formulas, either entered directly, or replicated from other cells on the template. When you enter a template of this complexity, it is very likely that some mistakes will be made. Identifying and correcting these mistakes is essential if you expect the template to provide you with useful information.

To be sure the template is working exactly the way you want it to, follow these important rules:

- After the template is finished and saved to a diskette, fill the form out with the numbers given in the illustrations on pages 141–142. If your results vary in any way from the ones shown, check the cell in question. Always start at the top left-most corner and work your way across and down the template. If the template checks, clear the screen; DON'T SAVE THIS VERSION BACK TO THE DISK.

If the template has problems, you have a choice to make: You can either correct the template with the numbers in it, or find the error, take notes, and then go back and correct the master template. The first way is better. When the template is completely "debugged," it's a simple matter to re-enter the data entry spaces you erased when entering the test numbers. It's a small price to pay for a reliable template. Fill the template out with information you have calculated manually using your normal methods. Compare the results. If any are different, track down the reason. The most harmful errors are the ones that aren't obvious. Extreme care should be taken to debug the template.

- When troubleshooting a template, be sure your recalculation mode is set to automatic (type **/GRA**). This will insure that once an error is corrected, the sheet will be recalculated and any rows to which this cell referred corrected as well.

Recalculation errors are errors caused by your failure to recalculate a worksheet. If the template is calculating manually, any data entered, or changes made, won't be carried throughout the worksheet. Template.1 has no circular references, so hitting the **!** key once, or setting the recalculation to **/GRA**, should be sufficient. In the unlikely event it may not be, you should always hit the **!** key at least once before printing or examining a report.

Things to look for: A troubleshooter's check list

Format errors: Do you show too many or too few digits to have ease of readability combined with the required precision? To know that your profit is 10.1001345% doesn't tell you much more than knowing your profit is 10%. In this case, formatting the display with the **/FI** command makes it easier to read and compare figures. If you use the **/FI** command, percents such as 10.4% and 10.6% will be rounded off to 10% and 11% respectively. A format of **/F$** will give you a slightly more precise answer. Using **/F$**, for instance, would display the same 10.4% and 10.6% as 10.40% and 10.60%. For maximum precision, but a difficult display to read, use **/FG**. This will display any decimals out to the maximum number of characters available in the column diisplay. If your decimal fills the column and you want to see more, temporarily change the column width with the **/GC** command. **/GC40** will fill the 40-column display on the Apple II and **/GC80** will do the same with the 80-column display on the Apple III.

Formula errors: These can frequently be found only by checking the results on a completed template with the results found by calculating the same information manually. When discrepancies are found, check the cell involved and all cells to which it relates. The cell contents may, for instance, be calculated by dividing, multiplying, adding to, or subtracting from another cell's contents. You should check the other cell, because it may be the one that is wrong.

If you can't find the problem quickly, place the cursor in the cell in question and compare the cell contents, as they are displayed on the cell contents line, with the contents as described in the appropriate section of this book. Scan the step illustrations to find the section in which the row, or column, involved was entered. Check that section to see if the illustration and your cell contents match. If they don't, it is wise to assume some independent judgment. Although the authors have tried to be painfully accurate, mistakes do happen.

Advanced Version: When using the Advanced Version, you can display all formulas on the worksheet. This makes it easier to compare the worksheet with the formulas that should have been entered. The *expression* command displays formulas, rather than their calculated values. You can also make a printout of the formulas displayed in the cells in which they are entered. To display all formulas on the worksheet, type **/GAEY**. You may have to temporarily change some column widths to see complete formulas.

Replication errors: If you have a serious problem, such as an entire section that isn't functioning properly, the problem was probably caused when you replicated rows or columns. The sequence of **N**'s and **R**'s that you are directed to enter by the prompt line is critical. Percentages in all of the percent columns are calculated by dividing all numbers in the column to the percent column's immediate left by the same number. In the case of the income

statement, the number dividing all other numbers is net sales revenue; on the balance sheet, it is total assets. Not using the **N** key to keep these divisors constant when replicating will cause wrong numbers. Fortunately, errors caused in this way are frequently so bizarre that the problem is immediately obvious.

Error messages: These are usually caused by failure to close brackets used in formulas, or by division of a cell by one that contains a zero value. Check any cell containing ERROR, and see if you can locate the cause. Be sure to check all cells to which the incorrect cell is related by formulas, since an error in a cell to which this cell refers will cause an ERROR to appear. Track back to the first error and correct it. This may cause other messages to disappear as well.

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